

**UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF PUERTO RICO**

**UNITED STATES OF AMERICA,**

**Plaintiff,**

**COMUNIDADES UNIDAS CONTRA  
LA CONTAMINACION**

**Plaintiff-Intervenor**

**v.**

**PUERTO RICO ELECTRIC POWER  
AUTHORITY,**

**Defendant.**

**CIVIL ACTION  
NO. 93-2527 CCC**

**CONSENT DECREE MODIFICATION**

WHEREAS, plaintiff, United States of America, on behalf of the United States Environmental Protection Agency ("EPA"), entered into a Consent Decree in this matter (Docket No. 93-2527-CCC) with defendant, Puerto Rico Electric Power Authority ("PREPA"). The Consent Decree was entered by the United States District Court on March 19, 1999 (as entered by the District Court, the "Consent Decree"). Entry by the District Court was affirmed by the United States Court of Appeals for the First Circuit on February 25, 2000.

WHEREAS, the Consent Decree provides for the use of EPA Reference Method 9 ("Method 9") in performing visible emissions readings at sixteen existing Generating Units at PREPA Power Plants (the "Units") so as to determine compliance of the Units with Rule 403 of the Puerto Rico Regulations for the Control of Atmospheric Pollutants ("Rule 403") and to determine compliance with the Consent Decree.

WHEREAS, the United States and PREPA (the "Parties") dispute how Method 9 should be interpreted and implemented in performing visible emissions readings at the Units (the "Method 9 Dispute").

WHEREAS, the Parties disputed whether "repetitious, egregious, or persistent" violations of Rule 403 occurred between March 1999 and November 1999 at electrical generating Units 5 and 6 located at the PREPA South Coast Plant (the "REPs Dispute")(together with the Method 9 Dispute, the "Disputes").

WHEREAS, pursuant to the Consent Decree, on November 5, 1999, EPA issued a Notice of Dispute Resolution Determination Regarding the Proper Implementation of EPA Reference Method 9 and the Proper Establishment of Optimal Operating Ranges (the "EPA Method 9 Determination").

WHEREAS, pursuant to the Consent Decree, on November 22, 1999 PREPA filed with the United States District Court a Petition for Dispute Resolution contesting the EPA Method 9 Determination.

WHEREAS, pursuant to the Consent Decree, on February 2, 2000, EPA issued a Notice of Dispute Resolution Determination Regarding Recurring, Egregious or Persistent Violations of Rule 403 of Puerto Rico Regulations for the Control of Atmospheric Pollution of the Commonwealth of Puerto Rico ("PRRCAP") at the South Coast Plant (the "EPA REPs Determination").

WHEREAS, pursuant to the Consent Decree, on February 28, 2000, PREPA filed with the United States District Court a Petition for Dispute Resolution contesting the EPA REPs Determination.

WHEREAS, the Parties and Comunidades Unidas Contra La Contaminacion ("CUCCo") filed various motions and other submissions with the Court concerning the Disputes.

WHEREAS, since entry of the Consent Decree, EPA issued Notices of Violations of the Clean Air Act to PREPA (the "NOVs") which notified PREPA that EPA determined that PREPA had violated Rule 403 at certain PREPA Units.



WHEREAS, on October 15, 1999, EPA issued a Demand for Payment of Stipulated Penalties relating to alleged visible emissions violations during the period from April 20, 1999 through October 13, 1999.

WHEREAS, the Parties and CUCCo have met and in good faith sought to negotiate a resolution of the matters described in Paragraph 2 hereof. That resolution is embodied in this Modification. It includes provisions addressing concerns raised by CUCCo during the negotiation sessions.

WHEREAS, the Parties, without conceding their respective positions, and without further litigation, have resolved the matters described in Paragraph 2 hereof.

WHEREAS, nothing in this Modification is intended to impact or affect in any way any criminal proceedings or criminal plea agreement.

WHEREAS, the Parties agree, without adjudication or admission of facts or law, that the settlement embodied in this Modification is in the public interest and that entry of this Modification without further litigation is an appropriate resolution of the matters described in Paragraph 2 hereof, and the Parties consent to the entry of this Modification.

WHEREAS, this Modification is a modification of the Consent Decree, it is fully incorporated into the Consent Decree and enforceable by the Court, and only where it is specified does it modify existing terms of the Consent Decree.

NOW, THEREFORE, it is hereby ordered, adjudged, and decreed as follows:

#### I. JURISDICTION

1. The Court has jurisdiction over the subject matter of this action and over the Parties to this Modification pursuant to Paragraphs 30 and 133 of the Consent Decree.

#### II. OBJECTIVES

2. It is the express purpose of the Parties entering into this Modification to resolve: the Demand for Payment of Stipulated Penalties issued by EPA on October 15, 1999; the Notice of Dispute Resolution Determination Regarding the Proper Implementation of EPA Reference Method 9 issued by EPA on November 5, 1999; the Petition for Dispute Resolution contesting EPA's November 5, 1999 Determination filed by PREPA on November 22, 1999; the Notice of

Dispute Resolution Determination Regarding Recurring, Egregious or Persistent Violations of Rule 403 of Puerto Rico Regulations for the Control of Atmospheric Pollution of the Commonwealth of Puerto Rico ("PRRCAP") at the South Coast Plant issued by EPA on February 2, 2000; the Petition for Dispute Resolution contesting EPA's February 2, 2000 Determination filed by PREPA on February 28, 2000; the various motions and other submissions concerning these disputes filed by both Parties as well as CUCCo; the NOV's; and all environmental civil claims for violations of Rule 403 known and/or reported to EPA prior to the date of lodging of this Modification. This does not include payments of Stipulated Penalties that PREPA is required to pay pursuant to the "self-assessed" requirement of Section XIV of the Consent Decree.

3. It is also the objective of the parties to resolve, through this Modification, claims of the United States for only environmental civil penalties and/or injunctive relief concerning the matters described in Paragraph 2 hereof.

### III. METHOD 9 OPACITY READINGS

4. PREPA agrees that from the date of lodging of this Modification, with regard to any PREPA residual (i.e. #4, 5, or 6) fuel oil-fired generating units, including those units not subject to the Consent Decree, PREPA will (a) apply the EPA Interpretation (as summarized in Paragraph 5 below and as detailed in the November 5, 1999 EPA Method 9 Determination) when taking visible emission readings as required by the Consent Decree, and (b) not contest the EPA Interpretation in any administrative, judicial or other proceedings. Also, to the extent that PREPA voluntarily performs any visible emissions readings required by this Modification prior to the lodging of this Modification with the Court, PREPA agrees that it will apply the EPA Interpretation when taking such visible emission readings.

5. The EPA Interpretation of Method 9 maintains that visible emission opacity observations shall be made, in accordance with the language of Method 9, "at the point of greatest opacity in that portion of an emission plume where condensed water vapor is not present." And that, as it stated in its Method 9 Determination:

The generally white colored plumes emitted and potentially emitted from PREPA's stacks are not detached steam plumes, nor condensed water plumes. These plumes are

composed of sulfuric acid at significant concentrations. The sulfuric acid is a condensate in mist form. These types of plumes are called secondary plumes, because they generally form outside the stack when a gaseous component of the stack exhaust condenses into visible droplets or mist form. The point at which maximum opacity typically occurs is a few stack diameters downwind of the stack because it takes a certain amount of time for maximum condensation of the sulfuric acid mist to occur. The proper point to take all Method 9 VE readings of such a sulfuric acid mist plume, including the ones taken to establish Optimal Operating Ranges pursuant to the Consent Decree, is the point of "greatest opacity."

6. The obligations set forth in Paragraph 4 above pertaining to the EPA Interpretation are the only obligations imposed by either the Consent Decree or this Modification on residual (i.e. #4, 5, or 6) fuel oil-fired generating units, other than the "Units."

7. PREPA reserves the right to (a) dispute any interpretation of Method 9, whether by EPA or any other party, other than the EPA Interpretation set forth above, and (b) dispute whether any given Method 9 visible emissions reading has been properly performed.

8. Any determination of compliance with opacity limitations shall be made considering all exemptions, exclusions, limitations and qualifications contained in the Consent Decree and in Federal and Commonwealth law and regulations.

9. The Parties agree that certain Pollution Control Equipment, such as wet scrubbers and wet electrostatic precipitators, installed pursuant to Paragraph 11 below, by the nature of their intended design may introduce water vapor into the stack gases and therefore may change the appearance of the plumes emitted from stacks controlled by such Pollution Control Equipment. Consequently, the use of such equipment may alter the point within such plumes where Method 9 visible emissions readings should be taken.

#### IV. FUEL OIL SULFUR CONTENT

10. For PREPA's South Coast Plant (Units 5 and 6) and PREPA's Aguirre Plant (Units 1 and 2), PREPA agrees to abide by the following schedule for the use of fuel oil in these Units: (a) until February 28, 2005, PREPA shall use fuel oil with a sulfur content of no more than 1.0%; (b) commencing March 1, 2005, PREPA shall use fuel oil with a sulfur content of no more than 0.75%; and (c) except as provided below in Paragraph 11 below, commencing March 1, 2007, PREPA shall use fuel oil with a sulfur content of no more than 0.50%.

11. PREPA may install Pollution Control Equipment (as defined below) on any one or more of South Coast Units 5 and 6 and Aguirre Units 1 and 2. If PREPA demonstrates to EPA through Performance Testing (as defined in Paragraph 13 below) of such Unit(s) that by use of the Pollution Control Equipment such Unit(s) achieve(s) "Consistent Compliance" (as determined by EPA pursuant to Paragraph 15) with the requirements of Rule 403 and the Consent Decree (i.e., opacity and Paragraphs 12 and 13 below), then, for each such Unit, PREPA may use fuel (oil or otherwise) with a sulfur content higher than allowed under Paragraph 10 above (as otherwise permitted by applicable law), to be implemented under a reasonable transition schedule to be approved by EPA, so long as PREPA continues to achieve Consistent Compliance with the requirements of Rule 403 and the Consent Decree. If, for any given Unit, the Performance Testing does not demonstrate that by use of the Pollution Control Equipment such Unit achieves Consistent Compliance with the requirements of Rule 403 and the Consent Decree, then PREPA shall continue to use, for such Unit, fuel oil with a sulfur content of no more than 0.50%, until such a demonstration is subsequently made. PREPA may attempt to demonstrate the achievement of Consistent Compliance using Pollution Control Equipment notwithstanding any failure to have made such a demonstration on one or more prior occasions.

12. "Pollution Control Equipment" shall mean emission control equipment that addresses the opacity of the plumes and achieves a reduction in sulfur oxides from PREPA emissions such that the amount of sulfur oxides emitted in pounds per million British thermal unit(s) ("lbs/MMBtu") while operating such equipment is equal to or less than the amount of sulfur oxides emitted when the respective PREPA Generating Unit is combusting a fuel oil with a sulfur content of 0.50%.

13. "Performance Testing" shall mean the testing of Pollution Control Equipment, using one or more fuels of PREPA's choice that are compatible with the Pollution Control Equipment, in compliance with all applicable permitting obligations, engineering requirements and law and regulation. In order to ensure that the reduction of sulfur oxides while using Pollution Control Equipment is equal to or greater than that achieved through the use of 0.50% sulfur fuel alone, as part of Performance Testing PREPA shall make available data demonstrating

the average higher heating value in Btu per pound ("Btu/lb") of fuel oil with a sulfur content of no more than 0.50% and the higher heating value (Btu/lb) of such fuels of PREPA's choice that are used during the Performance Testing. Performance Testing shall be conducted within ninety (90) days of start up of the Pollution Control Equipment.

14. PREPA shall use a fuel with a sulfur content of no more than 1.0% at South Coast Units 1 through 4 if PREPA demonstrates to EPA that those Units achieve Consistent Compliance with the requirements of Rule 403 and the Consent Decree when using that fuel oil. Unless and until PREPA makes such a demonstration, PREPA shall use fuel oil in accordance with the following schedule: (a) until February 28, 2005, PREPA shall use fuel oil with a sulfur content of no more than 1.0%; (b) commencing March 1, 2005, PREPA shall use fuel oil with a sulfur content of no more than 0.75%; and (c) commencing March 1, 2007, PREPA shall use fuel oil with a sulfur content of no more than 0.50%.

15. In determining whether the degree of compliance by PREPA constitutes Consistent Compliance, EPA reserves the right to exercise its discretionary authority, but EPA shall consider applicable industry standards and EPA technical and enforcement policy and guidance. PREPA reserves the right to dispute whether EPA has properly determined whether the degree of compliance achieved by PREPA constitutes Consistent Compliance.

16. At PREPA's Palo Seco facility, PREPA shall continue using fuel oil with a sulfur content of no more than 0.50% through July 18, 2009.

17. At PREPA's San Juan facility, PREPA shall continue using fuel oil with a sulfur content of no more than 0.50% until the earlier of (a) July 18, 2009 or (b) the issuance of a permit or permits by either EPA or the Puerto Rico Environmental Quality Board ("EQB") containing a condition that provides for use of fuel oil with a sulfur content of no more than 0.50%, at which time PREPA shall be subject to said permit condition instead of this Paragraph 17 of this Modification.

18. If PREPA chooses to install Pollution Control Equipment, EPA agrees to coordinate with PREPA to ensure reasonably prompt review and consideration of permit applications for any EPA permits that may be necessary for such Pollution Control Equipment.



## V. OPTIMAL OPERATING RANGES

19. PREPA shall revise and, if necessary, modify the current Optimal Operating Ranges ("OORs") for the Units, in conformance with the procedures required by the Air Compliance Attachment of the Consent Decree.

20. It is understood that PREPA intends to perform the revisions and, if necessary, modifications of the OORs in coordination with PREPA's Conservation Program. The OOR revisions and, if necessary, modifications shall be completed for four (4) Generating Units by June 30, 2004, an additional six (6) Generating Units by December 31, 2004 and the remaining six (6) Generating Units by June 30, 2005.

21. PREPA shall notify EPA, CUCCo, and the Environmental Review Contractor at least two weeks prior to any OOR testing. Notwithstanding the foregoing sentence, in the event that OOR testing is re-scheduled due to weather conditions, third-party contractor scheduling considerations, operational considerations, or any other justifiable reason determined by PREPA to necessitate such re-scheduling, and such re-scheduling occurs within two weeks of the date on which the re-scheduled testing is to commence, then PREPA shall notify EPA, CUCCo, and the Environmental Review Contractor promptly of the justification for such a change and of the re-scheduled date, but PREPA shall not be required to provide two weeks advance notice of same.

22. PREPA shall include in the Quarterly Reports submitted pursuant to the Consent Decree the results of any OOR testing conducted during the preceding quarter pursuant to this Modification.

## VI. NITROGEN OXIDE REDUCTION

23. PREPA shall reduce its Nitrogen Oxide ("NOx") emissions at its Palo Seco, Aguirre and South Coast Generating Units by implementing the NOx Program ("NOx Program") described in this Section for these Units. All NOx emission testing ("NOx Testing") shall be conducted in accordance with Appendix A. NOx Testing shall be performed to determine NOx emission baselines, to determine whether and to what extent NOx Optimization and/or Low NOx Modifications (as defined below) shall be performed, and to determine to what extent NOx reductions have been maintained. In conjunction with NOx Optimization and/or Low NOx Modification, optimal operating ranges ("OORs") for oxygen shall be verified where necessary

and, to the extent necessary, shall be modified pursuant to the Consent Decree. Air Compliance Status Reports, required pursuant to the Consent Decree Air Compliance Attachment Section C, shall include a report on activities conducted pursuant to the NOx Program.

24. Prior to, or within 180 days of the lodging of this Modification, PREPA shall conduct initial NOx Testing during representative operating conditions at its Palo Seco, Aguirre and South Coast Generating Units.

25. Upon completion of the NOx Testing referred to in Paragraph 24 above, the NOx emission baselines for the particular plant or group of Units subject to the NOx Program shall be calculated as follows:

- (a) for each of the Palo Seco and Aguirre Plants, PREPA shall calculate a weighted average NOx emission rate, defined as the sum of the rated-capacity (in megawatts) of each individual Generating Unit subject to the NOx Program ("MW<sub>i</sub>") multiplied by the NOx emission rate (E<sub>i</sub>) of that Unit (in lb/mmBtu), divided by the sum of the rated capacity of all such Units subject to this Program at each plant.

$$\text{Rated-capacity weighted average NOx emission rate} = \frac{\sum (MW_i \times E_i)}{\sum (MW_i)} \quad \text{Eq. (1);}$$

- (b) for South Coast Generating Units 1, 2, 3, and 4 ("Small Units"), PREPA shall calculate the weighted-average NOx emission rate, as defined as in Eq. (1), but with the denominator corresponding to the sum of the rated capacity (in megawatts) of the Small Units; and
- (c) for South Coast Generating Units 5 and 6 ("Large Units"), PREPA shall calculate the weighted-average NOx emission rate, as defined as in Eq. (1), but with the denominator corresponding to the sum of the rated capacity (in megawatts) of the Large Units.

26. PREPA shall include, in the appropriate Air Compliance Status Reports, the NOx emission baselines established in accordance with Paragraph 25 above as well as a description of the representative operating conditions. This would include information regarding the fuel and

emissions conditions at each Unit at the time of the NOx Testing. In addition, on an ongoing basis, PREPA shall collect data related to the nitrogen content of its fuel supply by nitrogen testing of fuels in accordance with ASTM Method D4629. This data shall be made available to EPA, on-site, upon request, and made available to EPA within seven (7) days of an EPA written request made to the Head of the Environmental Protection Division of PREPA.

27. In addition to the initial NOx Testing referred to in Paragraph 24 above, the NOx Program shall consist of (a) operational adjustments, if required under Paragraph 28(a), performed in accordance with the optimization protocol attached as Appendix "B" ("NOx Optimization"), and (b) technically and economically reasonable physical changes to reduce NOx formation ("Low NOx Modifications"), if required under Paragraph 28(b). Low NOx Modifications shall include one or more physical changes, such as the installation of modified burner tips, nozzles or diffuser plates or other alterations of the fuel burner assemblies as may be necessary to comply with the provisions of Paragraph 28. Low NOx Modifications shall not include burner retrofitting and major modifications, such as complete burner assembly replacement, modifications which require extended outages that cannot be implemented during planned environmental outages or other modifications which can be demonstrated to be technically or economically unreasonable.

28. PREPA shall use its best efforts to attain NOx reductions ("NOx Reductions") in accordance with (a) and (b) below:

(a) NOx Optimization

PREPA shall perform NOx Optimization if the NOx emission baseline exceeds the thresholds ("NOx Emission Thresholds") provided below for that particular plant or group of Units:

Palo Seco	0.30 lbs/mmBtu
Aguirre	0.30 lbs/mmBtu



South Coast:

Small Units	0.30 lbs/mmBtu
Large Units	0.40 lbs/mmBtu

(b) Low NOx Modifications

If NOx Optimization conducted pursuant to (a) above does not result in NOx reductions that achieve the NOx Emission Thresholds specified for a particular plant or group of Units, PREPA shall either demonstrate that the particular plant or group of Units has/have attained the reductions ("NOx Percentage Reductions") specified below, or perform Low NOx Modifications at that particular plant or group of Units to attain the NOx Percentage Reductions specified below:

15% at Palo Seco Plant  
15% at Aguirre Plant  
15% at South Coast Plant Small Units  
20% at South Coast Plant Large Units

29. Operating parameters affected by the NOx Optimization or Low NOx

Modifications shall be incorporated into the OORs and operations manuals, as appropriate.

30. NOx Optimization, performed pursuant to Paragraph 28(a) shall be completed within 24 months of the lodging of this Modification. Low NOx Modifications, performed pursuant to Paragraph 28(b) shall be completed within 18 months of the completion of NOx Optimization.

31. Upon completion of NOx Optimization and/or Low NOx Modification for a particular plant or group of Units, as specified in Paragraph 28, NOx Testing shall be conducted to determine whether the NOx Emission Thresholds specified in Paragraph 28(a) or, in the alternative, whether the NOx Percentage Reductions specified in Paragraph 28(b) have been attained for that particular plant or group of Units.

32. Within sixty (60) days following completion of the NOx Testing conducted pursuant to Paragraph 31 above, PREPA shall submit a written report ("NOx Reduction Report")

which describes, for that particular plant or group of Units, any NOx Optimization and/or Low NOx Modifications performed pursuant to Paragraph 28. The NOx Reduction Report shall also include the results of NOx Testing conducted for that particular plant or group of Units pursuant to Paragraphs 24 and 31 above. In addition, if the NOx Emission Thresholds or the NOx Percentage Reductions specified in Paragraph 28 have not been attained, the NOx Reduction Report shall include an explanation as to why further NOx reduction measures were not performed.

33. Within ninety (90) days of submission of a NOx Reduction Report, PREPA shall conduct NOx Testing to determine whether the NOx Reductions attained pursuant to Paragraph 28 are relatively maintained ("Relatively Maintained"). If the NOx Reductions are Relatively Maintained, further periodic testing shall be conducted annually thereafter. As used in this Section, Relatively Maintained shall mean that the NOx Reductions for a particular plant or group of Units have been maintained within 8% (measured in lbs/mmBtu) of the NOx Emission Thresholds and/or NOx Percentage Reductions specified in Paragraph 28 or, if initially greater than those specified in Paragraph 28, within 8% of the NOx Reductions reported in the NOx Reduction Report.

34. If the NOx Testing conducted pursuant to Paragraph 33 indicates that the NOx Reductions reported in the NOx Reduction Report have not been Relatively Maintained, PREPA shall re-perform NOx Optimization in accordance with Appendix "B" and repeat NOx Testing in an effort to reestablish the NOx Reductions reported in the NOx Reduction Report within the margins established pursuant to Paragraph 33.

35. If, after any NOx Optimization conducted pursuant to Paragraph 34, PREPA is unable to demonstrate that it has Relatively Maintained the NOx Reductions at a particular plant or group of Units, PREPA shall:

- (a) submit an engineering study to EPA which analyzes the technical reasons for being unable to have Relatively Maintained the NOx

Reductions at a particular plant or group of Units. Such analysis shall include a discussion of the economic and technical reasons that PREPA considered to determine whether NOx Reductions originally attained could be recaptured.

- (b) conduct NOx Testing every six (6) months, and if the NOx Reductions originally attained have further deteriorated below the levels reported in the NOx Reduction Report, perform NOx Optimization pursuant to Paragraph 34 and report pursuant to Paragraph 35(a) every six (6) months thereafter until either:
- 1) the Consent Decree has terminated for every Unit considered in the particular plant or group of Units which have been unable to have Relatively Maintained NOx Reductions, or
  - 2) PREPA can demonstrate that the originally attained NOx Reductions have been Relatively Maintained, in which case PREPA shall conduct annual NOx Testing pursuant to Paragraph 33.

36. Should safety or reliability factors prevent the prompt re-testing and/or re-optimization of Generating Units subject to the NOx Program, as required in Paragraphs 34 and 35, PREPA shall provide EPA with the reasons re-testing was prevented and an alternate schedule to complete these requirements for EPA's review and approval.

37. The NOx Program is not a Compliance Program, as defined by the Consent Decree. As such, notwithstanding Paragraph 35 above, compliance with the NOx Program for three years shall not be a precondition for granting a termination of the Consent Decree.

#### VII. FUEL USED FOR START UP

38. PREPA shall use diesel fuel (or number 2 fuel oil) during Cold Start Conditions at all oil-fired Generating Units at the San Juan, Palo Seco, Aguirre and South Coast facilities. For

the purpose of this Modification, a "Cold Start Condition" shall mean a boiler ignition in a Unit that has been off-line for 48 hours or longer.

39. PREPA shall commence using diesel fuel (or number 2 fuel oil) during Cold Start Conditions at each of its sixteen (16) oil-fired Generating Units subject to this Modification. The use of diesel fuel (or number 2 fuel oil) during Cold Start Conditions shall commence at ten (10) Generating Units by June 30, 2004, at two (2) Generating Units by December 31, 2004, and at the remaining four (4) oil-fired Generating Units by September 30, 2005.

40. PREPA shall report on the progress of this diesel fuel program in the Consent Decree Quarterly Report next following the commencement of the use of diesel fuel during Cold Start Conditions as scheduled above.

#### VIII. EMISSION REDUCTION CREDITS

41. EPA agrees to coordinate with PREPA to ensure that the commitments contained in Sections IV and VI above do not result in PREPA losing any emission reduction credits to which it would otherwise be entitled pursuant to applicable law.

42. Should PREPA seek credits for any emission reductions resulting from activities conducted pursuant to this Modification, EPA will coordinate with PREPA to ensure that the requirements to reduce those emissions are incorporated into a federally enforceable document which allows for emission credits if PREPA would, but for this Modification, be entitled to be considered for such credits.

#### IX. ADDITIONAL COMMITMENTS BY PREPA

43. Prior to any use by PREPA of a fuel oil with a sulfur content of greater than 0.50% at Palo Seco, PREPA shall provide public notification (i.e., newspaper notice) and direct notification to CUCCo (or any successor organization), of such proposed change. PREPA shall provide such notification at least thirty (30) days prior to implementing such change in fuel usage.

44. PREPA agrees to allow a reasonable number of CUCCo representatives to be

present as observers at significant activities involving the revision of the OORs required pursuant to Section V of this Modification, and to arrange meetings at which a reasonable number of CUCCo representatives and the Environmental Review Contractor ("ERC") may attend to discuss matters related to PREPA's compliance with the Consent Decree and this Modification. The number and identity of such representatives shall be subject to the approval of PREPA, which approval shall not be unreasonably withheld.

45. Public documents regarding matters related to PREPA's compliance with the Consent Decree shall be made readily available by the Head of the Environmental Protection Division of PREPA.

46. The ERC may request, and in such event PREPA agrees to provide to the ERC, in conformance with the provisions of Paragraphs 4 and 5 c. of Section XI (Environmental Review Contractor) of the Consent Decree, timely information regarding the use of residual fuel additives in its Units.

#### X. CIVIL PENALTY

47. Within thirty (30) days after entry of this Modification, PREPA shall pay a civil penalty of \$300,000. If that amount is not timely paid, interest shall accrue on that amount commencing thirty (30) days after entry of this Modification and continuing until payment of that amount is made. Interest shall accrue at the rate provided for in 28 U.S.C. § 1961 ("Interest"). PREPA shall make payment by FedWire Electronic Funds Transfer ("EFT") in accordance with current EFT procedures and in accordance with written instructions to be provided by the United States Attorney's Office, Torre Chardón, 350 Carlos Chardón Street, San Juan, Puerto Rico 00918, referencing USAO File Number \_\_\_\_\_, EPA Region II, and DOJ Case Number 90-5-2-1-1750/2. The costs of such electronic funds transfer shall be the responsibility of PREPA.

#### XI. ENVIRONMENTAL REVIEW CONTRACTOR PROGRAM

48. Within thirty (30) days after entry of this Modification, PREPA shall deposit



\$100,000 into the Environmental Review Contractor escrow account, as described in Section XI of the Consent Decree. If that amount is not timely deposited, interest shall accrue on that amount commencing thirty (30) days after entry of this Modification and continuing until that amount is deposited. Any accrued interest shall be deposited into the Environmental Review Contractor escrow account, as described in Section XI of the Consent Decree.

#### XII. LAND ACQUISITION PROJECT

49. Within thirty (30) days after the entry of this Modification, PREPA shall deposit \$100,000 into the Land Acquisition Fund, as described in Section XII.C. of the Consent Decree. If that amount is not timely deposited, interest shall accrue on that amount commencing thirty (30) days after entry of this Modification and continuing until that amount is deposited. Any accrued interest shall be deposited into the Environmental Review Contractor escrow account, as described in Section XI of the Consent Decree.

#### XIII. STIPULATED PENALTIES

50. PREPA shall pay stipulated penalties to the United States for any violations of this Modification, as set forth below.

51. For each Unit of PREPA's South Coast and Aguirre Plants, the stipulated penalty for each visible emissions opacity violation and each continuous emission monitor opacity violation shall be increased from the levels in Paragraph 68 of the Consent Decree to the levels listed in the following two tables until March 1, 2007 or the date when PREPA has installed and is operating pollution control equipment at the Unit in question such that PREPA achieves Consistent Compliance, as determined in accordance with Paragraph 15 hereof, with the requirements of Rule 403, whichever is earlier. After that date, the stipulated penalties applicable to opacity violations at the Unit in question shall revert to those levels contained in Paragraph 68 of the Consent Decree.

**STIPULATED PENALTY APPLICABLE  
TO VIOLATION(S) OF RULE 403(a) OF THE PRRCAP  
DETECTED BY CONTINUOUS EMISSIONS MONITORS**

Six-Minute Periods at > 20% to 40% Opacity	Six-Minute Periods at > 40% to 60% Opacity	Six-Minute Periods at > 60% Opacity	Penalty Amount Per Six-Minute Period
The first through tenth six-minute periods in any single day	The first through fourth six-minute periods in any single day	The first six-minute period in any single day	\$300
The eleventh through eighteenth six-minute periods in any single day	The fifth through ninth six-minute periods in any single day	The second through fourth six-minute periods in any single day	\$900
The nineteenth and beyond six-minute periods in any single day	The tenth and beyond six- minute periods in any single day	The fifth and beyond six- minute periods in any single day	\$1500

**STIPULATED PENALTY APPLICABLE  
TO VIOLATION(S) OF RULE 403(A) OF THE PRRCAP  
DETECTED BY METHOD 9 VISIBLE EMISSIONS READINGS**

Six-Minute Periods at > 20% to 40% Opacity	Six-Minute Periods at > 40% to 60% Opacity	Six-Minute Periods at > 60% Opacity
The first through tenth six-minute periods in any single day:	The first through fourth six-minute periods in any single day:	The first six-minute period in any single day:
\$300 penalty amount per six-minute period	\$450 penalty amount per six-minute period	\$600 penalty amount per six-minute period
The eleventh and beyond six- minute periods in any single day:	The fifth and beyond six-minute periods in any single day:	The second and beyond six-minute periods in any single day:
\$1000 penalty amount per six- minute violation	\$1200 penalty amount per six- minute period	\$1400 penalty amount per six- minute period

52. The United States and PREPA agree that the above listed stipulated penalties will apply to each visible emission opacity violation and each continuous emission monitor opacity violation, with the exception of those violations subject to the consequences as set forth in the following sentence. The United States reserves its right to seek any penalty, remedy or sanction for visible emission opacity violation(s) and continuous emission monitor opacity violation(s) that, due to the nature, extent, duration, or severity of the violation(s), cannot reasonably be subject to stipulated penalties only. If the United States seeks statutory civil penalties for any opacity violation subject to the above stipulated penalties, PREPA shall be entitled to a reduction

in any statutory civil penalty assessed by the same amount paid in stipulated penalties for the same violation.

53. For any failure to: pay the Civil Penalty (\$300,000) plus any Interest as required by Paragraph 47; deposit \$100,000 plus any Interest into the Environmental Review Contractor escrow account as required by Paragraph 48; or deposit \$100,000 plus any Interest into the Land Acquisition Fund as required by Paragraph 49, PREPA shall pay a stipulated penalty in the following amount for each day during which any payment is not made:

<u>Period of Failure To Comply</u>	<u>Penalty Per Violation Per Day</u>
1 <sup>st</sup> through 30 <sup>th</sup> day	\$2,000
31 <sup>st</sup> and beyond	\$5,000

54. For each failure of a Generating Unit to timely comply with the requirements of this Modification pertaining to revising and, if necessary, modifying OORs, PREPA shall pay a stipulated penalty in the following amount for each day during which each violation occurs:

<u>Period of Failure To Comply</u>	<u>Penalty Per Violation Per Day</u>
1 <sup>st</sup> through 30 <sup>th</sup> day	\$750
31 <sup>st</sup> through 60 <sup>th</sup> day	\$1,250
61 <sup>st</sup> and beyond	\$1,750

55. Stipulated penalties shall be payable to the United States per violation per day for the following:

**Reporting Violations:**

(a) failure to submit nitrogen in fuel content data as required by Paragraph 26 of this Modification; and

(b) failure to submit the engineering study required by Paragraph 35(a) of this Modification.

**Operating Range Violations:**

(c) failure to incorporate operating parameters into OORs and operations manuals in accordance with Paragraph 29 of this Modification.



**Period of Failure  
To Comply**  
1<sup>st</sup> through 15<sup>th</sup> day  
16<sup>th</sup> through 60<sup>th</sup> day  
61<sup>st</sup> and beyond

**Penalty Per Violation  
Per Day**  
\$100  
\$200  
\$500

56. Stipulated penalties shall be payable to the United States per violation per day for the following:

**Reporting Violations:**

- (a) failure to submit the NOx Reduction report in accordance with Paragraph 32 of this Modification; and
- (b) failure to submit baseline NOx emission data required by Paragraph 26 of this Modification.

**Periodic Testing Violations:**

- (c) failure to comply with periodic testing obligations in accordance with Paragraphs 31, 33, 34, and 35(b) of this Modification.

**Period of Failure  
To Comply**  
1<sup>st</sup> through 15<sup>th</sup> day  
16<sup>th</sup> through 60<sup>th</sup> day  
61<sup>st</sup> and beyond

**Penalty Per Violation  
Per Day**  
\$200  
\$500  
\$800

57. Stipulated penalties shall be payable to the United States per violation per day for the following:

- (a) failure to conduct initial NOx Testing in accordance with Paragraph 24 of this Modification;
- (b) failure to perform NOx Optimization in accordance with Paragraph 28(a) of this Modification;
- (c) failure to perform NOx Modifications in accordance with Paragraph 28(b) of this Modification; and

(d) failure to complete NOx Optimization or Modification in accordance with Paragraph 30 of this Modification.

<u>Period of Failure To Comply</u>	<u>Penalty Per Violation Per Day</u>
1 <sup>st</sup> through 15 <sup>th</sup> day	\$500
16 <sup>th</sup> through 60 <sup>th</sup> day	\$1,000
61 <sup>st</sup> and beyond	\$1,500

58. For each Generating Unit that fails to timely comply with the requirements of this Modification pertaining to the commencement of the use of diesel fuel (or number 2 fuel oil) during Cold Start Conditions by June 30, 2004, December 31, 2004 or September 30, 2005 (as the case may be), PREPA shall pay a stipulated penalty in the following amount:

<u>Period of Failure To Comply</u>	<u>Penalty Per Violation Per Day</u>
1 <sup>st</sup> through 30 <sup>th</sup> day	\$500
31 <sup>st</sup> through 60 <sup>th</sup> day	\$1,000
61 <sup>st</sup> and beyond	\$2,000

59. For each separate failure of a Generating Unit to timely comply with the requirements of this Modification pertaining to the use of diesel fuel (or number 2 fuel oil) during discrete start ups under Cold Start Conditions, PREPA shall pay a stipulated penalty in the amount of \$1,000 for such violation at such Generating Unit.

60. For each failure of a Generating Unit to timely comply with the requirements of this Modification pertaining to Fuel Oil Sulfur Content contained in Paragraphs 10, 14, 16 and 17, above, PREPA shall pay a stipulated penalty in the following amount for each day during which the violation occurs:

<u>Period of Failure To Comply</u>	<u>Penalty Per Violation Per Day</u>
1 <sup>st</sup> through 30 <sup>th</sup> day	\$1,500
31 <sup>st</sup> through 60 <sup>th</sup> day	\$3,000
61 <sup>st</sup> and beyond	\$5,000

61. The Parties agree that any violations of Rule 403 or the Consent Decree resulting from the revision of OORs, and any violations of Rule 403 or the Consent Decree resulting from Performance Testing of Pollution Control Equipment, shall not be subject to any stipulated

penalties under this Modification or the Consent Decree. However, during such time periods the United States reserves its right to seek civil penalties.

62. Stipulated penalty payments to the United States shall be made, within thirty (30) days of the demand, by EFT referencing USAO File Number \_\_\_\_\_, EPA Region II, and DOJ Case Number 90-5-2-1750/2. The EFT shall be made in accordance with current EFT procedures and in accordance with written instructions to be provided by the United States Attorney's Office, Torre Chardón, 350 Carlos Chardón Street, San Juan, Puerto Rico 00918. The costs of such electronic funds transfer shall be the responsibility of PREPA. All stipulated penalties begin to accrue on the day after performance is due or on the day a violation occurs, and continue to accrue through the final day of all corrections of the noncompliance. Stipulated penalties accrue even if no demand is made, but need not be paid until a demand is made. Payments shall be made within thirty (30) days of the demand. In the event that a stipulated penalty payment is not made on time, such penalty shall be subject to interest at the statutory judgment rate set forth at 28 U.S.C. § 1961, for each day of late payment or non-payment. Nothing herein shall prevent the simultaneous accrual of separate penalties for separate violations of this Modification. Notwithstanding any other provision of this Section, the provisions of Paragraph 40 of the Consent Decree shall have full application to all stipulated penalties to which PREPA may be subject under this Modification, with the exception of any stipulated penalties to which PREPA may be subject under Paragraph 60 hereof.

63. Notwithstanding any other provision of this Section, the United States may, in its unreviewable discretion, waive payment of any portion of the stipulated penalties that have accrued pursuant to this Modification.

64. Except as specifically described in this Modification, nothing in this Modification shall be construed as prohibiting, altering or in any way limiting the ability of the United States to seek any other remedies or sanctions available by virtue of PREPA's violation of this Modification or the Consent Decree or of the statutes and regulations upon which the Consent

Decree and this Modification is based, or for PREPA's violation of any applicable provision of law.

65. Notwithstanding the stipulated penalty provisions above, for any violation of the requirements of this Modification pertaining to Sections III (Method 9 Opacity Readings) and IV (Fuel Oil Sulfur Content), the United States reserves all of its rights and remedies, including, but not limited to, the rights and remedies to seek enforcement of this Modification's requirements through civil contempt proceedings or other proceedings, and the right to request assessment of civil penalties and/or damages for violation of the requirements of this Modification.

66. PREPA may seek dispute resolution, pursuant to the Consent Decree (as modified by Section XV below), of any dispute that arises under this Modification or the Consent Decree, including but not limited to disputes relating to demands by the United States for payment of stipulated penalties under this Modification.

#### XIV. NON-WAIVER PROVISIONS

67. This Modification does not limit any rights or remedies available to the United States for any violation by PREPA of the Consent Decree, or Federal and Commonwealth laws and regulations, except as specifically described in this Modification.

68. This Modification does not limit any rights or remedies available to the United States for any criminal violations.

69. The United States expressly reserves all rights and remedies available to it for all violations by PREPA of this Modification. The United States contends that these rights and remedies include, but are not limited to, the right to seek enforcement of the provisions of this Modification through civil contempt proceedings or other proceedings, and the right to request assessment of civil penalties and/or damages for violations of this Modification.

70. Nothing herein shall be construed to limit the power of the United States, consistent with its authority, to undertake any action against any person, in response to conditions

which may present an imminent and substantial endangerment to the public health, welfare, or the environment.

71. Nothing herein shall be construed to impact, limit, expand or affect the authority of EPA to issue permits, or to create any obligation upon EPA to issue any permit. Additionally, nothing herein shall be construed as creating any permit condition or permit right for PREPA.

72. Nothing in this Modification constitutes or shall be interpreted as an admission of any fact, law, or past violation of the Consent Decree or law.

#### XV. DISPUTE RESOLUTION

73. The Parties agree that Section XV (Dispute Resolution) of the Consent Decree shall be amended as follows:

A. Paragraph 97 of the Consent Decree is hereby amended to provide that PREPA shall have forty-five (45) days from the date of the conclusion of the informal negotiation period within which to file a petition with the Court, rather than fifteen (15) days as originally provided in Paragraph 97.

B. Paragraph 97 of the Consent Decree is hereby further amended by the addition of the following sentence at the end of that Paragraph: "The Court shall decide all disputes pursuant to applicable principles of law for resolving such disputes. In their initial filings with the Court under this Paragraph 97, the Parties shall state their respective positions as to the applicable standard of law for resolving the particular dispute."

C. The reference in Paragraph 99 of the Consent Decree to fifteen (15) days is hereby amended to refer to forty-five (45) days.

#### XVI. COSTS

74. Each party shall bear its own costs and attorney's fees for the matters resolved by this Modification.



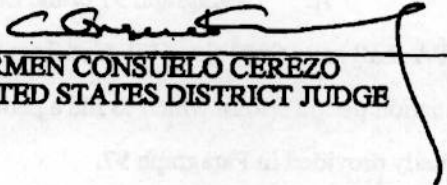
**XVII. RETENTION OF JURISDICTION**

75. This Modification is incorporated into the Consent Decree. The Court has and shall retain jurisdiction as provided in Paragraphs 30 and 133 of the Consent Decree.

**XVIII. PUBLIC COMMENT**

76. This Modification shall be lodged with the Court for a period of not less than thirty (30) days for public notice and comment in accordance with 28 C.F.R. § 50.7. The United States reserves the right to withdraw or withhold consent if the comments regarding this Modification disclose facts or considerations indicating that this Modification is inappropriate, improper, or inadequate. PREPA consents to the entry of this Modification without further notice.

DATED: September 8, 2004

  
CARMEN CONSUELO CEREZO  
UNITED STATES DISTRICT JUDGE

FOR PLAINTIFF, UNITED STATES,

DATED: 6.18.04

DATED: 6/18/04

*Tom Sansonetti*

THOMAS L. SANSONETTI  
Assistant Attorney General  
Environment & Natural Resources Division  
United States Department of Justice

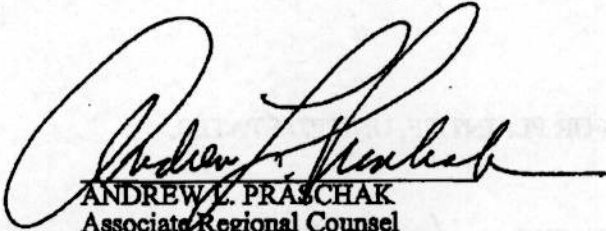
*Peter M. Flynn*

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H. GARCIA  
United States Attorney  
District of Puerto Rico

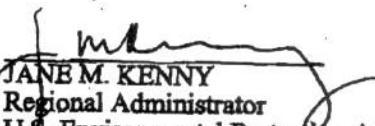
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Assistant United States Attorney  
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(787) 282-1841

DATED: *June 16, 2004*

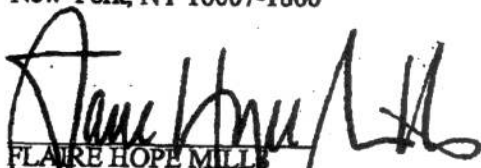
  
ANDREW L. PRASHAK  
Associate Regional Counsel  
U.S. Environmental Protection Agency  
Region 2, Caribbean Field Office  
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San Juan, Puerto Rico 00907-4127



DATED: 6/17/04

  
JANE M. KENNY  
Regional Administrator  
U.S. Environmental Protection Agency  
Region 2  
290 Broadway  
New York, NY 10007-1866

DATED: 6/17/04

  
FLAIRE HOPE MILLS  
Assistant Regional Counsel  
U.S. Environmental Protection Agency  
Region 2, Office of Regional Counsel  
290 Broadway  
New York, NY 10007-1866

JUN-21-2004 13:45

P.01/01

FOR DEFENDANT, PUERTO RICO POWER AUTHORITY,

DATED: 06-21-04

TOTAL P.01

UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF PUERTO RICO

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UNITED STATES OF AMERICA,	)	
	)	
Plaintiff,	)	
	)	
COMUNIDADES UNIDAS CONTRA	)	
LA CONTAMINACIÓN,	)	
	)	
Plaintiff-	)	
Intervenor	)	
	)	
v.	)	Civil Action No. 93-2527 CCC
	)	
PUERTO RICO ELECTRIC POWER	)	
AUTHORITY,	)	
	)	
Defendant.	)	

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CONSENT DECREE

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THE AIR COMPLIANCE ATTACHMENT

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THE SPCC COMPLIANCE ATTACHMENT

## CONSENT DECREE

WHEREAS, Plaintiff, the United States of America (the "United States" or "Plaintiff"), by authority of the Attorney General of the United States, on behalf of the Administrator of United States Environmental Protection Agency ("EPA"), filed a Complaint in this action on October 27, 1993, against Defendant, Puerto Rico Electric Power Authority ("PREPA" or "Defendant"), pursuant to the air quality and emission limitations requirements of the Clean Air Act, 42 U.S.C. §§ 7401-7431 (the "Clean Air Act"); the effluent limitations and National Pollutant Discharge Elimination System requirements of Sections 301 and 402 of the Federal Water Pollution Control Act (the "Clean Water Act"), 33 U.S.C. §§ 1311, 1342; the oil pollution prevention requirements promulgated at 40 C.F.R. Part 110 pursuant to Section 311 of the Clean Water Act, 33 U.S.C. § 1321; the inventory reporting requirements for hazardous chemicals pursuant to Section 312 of the Emergency Planning and Community-Right-to-Know Act ("EPCRA"), 42 U.S.C. § 11022; the hazardous substance release reporting requirements promulgated at 40 C.F.R. Part 302 pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), 42 U.S.C. § 9603; the hazardous substance release reporting requirements of

Section 304 of EPCRA, 42 U.S.C. § 11004; and the underground storage tank requirements promulgated at 40 C.F.R. Part 280 pursuant to Section 9003 of the Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. § 6991b; and

WHEREAS, the United States in its Complaint seeks, inter alia, injunctive relief and the imposition of civil penalties for the violations of the Clean Air Act, Clean Water Act, EPCRA, CERCLA, and RCRA alleged in the Complaint; and

WHEREAS, Defendant, PREPA, is a public corporation and governmental instrumentality of the Commonwealth of Puerto Rico, created under Title 22 of the Laws of Puerto Rico Annotated ("L.P.R.A."), Section 193, by the Commonwealth of Puerto Rico ("Puerto Rico" or the "Commonwealth") to own and operate electric power generating facilities in Puerto Rico; and

WHEREAS, the Parties agree and the Court finds that this Consent Decree has been negotiated by the Parties in good faith, that implementation of this Consent Decree will avoid prolonged and complicated litigation between the Parties, and that this Consent Decree is fair, reasonable, and in the public interest; and

WHEREAS, the Parties agree that by entering into this Consent Decree the Defendant has not admitted the truth of any

allegation in the Complaint except the allegations pertaining to subject-matter jurisdiction, personal jurisdiction, and venue; and

WHEREAS, the United States and PREPA consent to entry of this Consent Decree resolving the United States' claims without the necessity of trial or adjudication of any issues of fact or law and without any admission of liability by PREPA; and

WHEREAS, the United States and PREPA agree that settlement of this matter without protracted litigation is in the best interests of the Parties and the public;

NOW, THEREFORE, it is hereby ADJUDGED, ORDERED, and DECREED THAT:

#### I. DEFINITIONS

1. Unless otherwise stated herein, any term used in this Consent Decree, its Attachments, or Appendices that is defined in the Clean Air Act, 42 U.S.C. §§ 7401-7671, the Clean Water Act, 33 U.S.C. §§ 1251-2761, RCRA, 42 U.S.C. §§ 6901-6992, CERCLA, 42 U.S.C. §§ 9601-9675, EPCRA, 42 U.S.C. §§ 11001-11050, or the regulations promulgated thereunder, or in PREPA's National Pollutant Discharge Elimination System ("NPDES") permits, shall have the meanings set forth in such definitions.



2. "Administrative Orders" shall mean the Administrative Consent Orders for Palo Seco (EPA-CWA-II-92-136), Aguirre (EPA-CWA-II-92-145), and South Coast (EPA-CWA-II-92-120), issued under Section 309(a) of the Clean Water Act, 33 U.S.C. § 1319(a).

3. "Aguirre Power Complex" shall refer collectively to PREPA's thermoelectric power plant located in Aguirre ("Aguirre Power Plant" or "Aguirre Plant") and PREPA's combined cycle plant located in Aguirre ("Aguirre Combined Cycle Plant").

4. "Aguirre Power Plant Administrative Order" shall refer to the United States Environmental Protection Agency Administrative Order on Consent in In re Puerto Rico Electric Power Authority, No. EPA-CWA-II-92-145 (Sept. 29, 1992).

5. "Compliance Programs" shall refer to the requirements set forth in the Clean Air Act Compliance Program of Section V of this Consent Decree along with the Air Compliance Attachment to that Section, the Clean Water Act Compliance Program set forth at Section VI of this Consent Decree, the Spill Prevention Control and Countermeasure ("SPCC")/Oil Pollution Prevention Compliance Program set forth at Section VII of this Consent Decree, the EPCRA Compliance Program set forth at Section VIII of this Consent Decree, the CERCLA Section 103 and EPCRA Section 304

Compliance Program set forth at Section IX of this Consent Decree, and the Underground Storage Tank Compliance Program set forth at Section X of this Consent Decree.

6. "Consent Decree" or "Decree" shall mean this Consent Decree, all attachments and appendices hereto, and all modifications pursuant to Section XXIII ("Modifications") of this Consent Decree.

7. "Day" shall mean a calendar day unless expressly stated to be a working day. "Working day" shall mean a day other than a Saturday, Sunday, federal holiday, or Commonwealth holiday. In computing any period of time under this Consent Decree, where the last day would fall on a Saturday, Sunday, federal holiday, or Commonwealth holiday, the period shall run until the close of business of the next working day.

8. "DOJ" shall mean the U.S. Department of Justice and any successor departments or agencies of the United States Department of Justice.

9. "Environmental Quality Board" or "EQB" shall mean Puerto Rico's Environmental Quality Board, which is the local environmental regulatory agency for purposes of this action.

10. "EPA" shall mean the United States Environmental Protection Agency and any successor departments or agencies of the United States.

11. "Facility" or "Facilities" shall refer to PREPA's four electric generating power plants and one transmission center that are the subject of the Complaint. The four power plants are located in San Juan, Palo Seco, Aguirre, and Guayanilla (where the associated power plant is known as the "South Coast Plant" or the "Costa Sur Plant"). The transmission center is located in Monacillos ("Monacillos Transmission Center").

12. "Interest" shall mean interest at the rate established by the Secretary of the Treasury pursuant to 28 U.S.C. Section 1961. Accrued Interest shall be assessed on any payment that is made later than the date(s) for payment specified in this Consent Decree.

13. "Malfunction" shall mean any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment or process equipment or of a process to operate in a normal or usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation(s), or any upset condition or equipment breakdown preventable through the exercise of reasonable care shall not be considered malfunctions.

14. "NPDES" shall mean National Pollutant Discharge Elimination System.

15. "NPDES Permits" or "PREPA's NPDES Permits" shall mean National Pollutant Discharge Elimination System ("NPDES") Permit Nos. PR0000698, PR0001660, PR0001031, PR0001147, and all subsequently issued NPDES permits, permit amendments, or permit modifications for PREPA. Where this Consent Decree refers to particular outfalls by outfall number, it means those outfalls so designated in PREPA's NPDES Permits as such designations may have been modified by the November 15, 1996 Outfall/IWS Configuration Letter (referred to in paragraph 7 of Section VI of this Consent Decree) submitted by PREPA prior to the entry of this Consent Decree. Redesignation of any outfall in any subsequently issued NPDES permit, amendment or modification shall not relieve PREPA of any obligation under this Consent Decree.

16. "Palo Seco Power Plant Administrative Order" shall refer to the United States Environmental Protection Agency Administrative Order on Consent in In re Puerto Rico Electric Power Authority, No. EPA-CWA-II-92-136 (July 31, 1992).

17. "Parties" shall mean the United States and the Defendant, PREPA.

18. "Plaintiff" shall mean the United States.

19. "Power Plants" or "PREPA's Power Plants" shall refer to PREPA's four electric generating power plants, located in San Juan ("San Juan Power Plant" or "San Juan Steam Plant"), Palo Seco ("Palo Seco Power Plant" or "Palo Seco Steam Plant"), Aguirre ("Aguirre Power Plant"), and Guayanilla ("South Coast Power Plant," "South Coast Steam Plant," or "Costa Sur Power Plant").

20. "Quarter" shall mean a calendar quarter, unless expressly stated otherwise, such that the periods from January through March, April through June, July through September, and October through December each constitute a Quarter.

21. "Regulations for the Control of Atmospheric Pollution of the Commonwealth of Puerto Rico ("PRRCAP")," shall mean those regulations issued on July 24, 1980, and any amendments thereto, that are currently approved by 40 C.F.R. §52.2720 as part of the Puerto Rico State Implementation Plan.

22. "Section" shall mean each segment of this Consent Decree that is designated by a capital Roman numeral.

23. With respect to the Optimization Program, Continuous Monitoring Program, and Operations and Preventive Maintenance Program of Section V of the Consent Decree, "shut-down" of a Generating Unit shall mean the period beginning at 50% of a

Generating Unit's maximum capacity, during a time in which such load is decreasing from the required dispatch load, and ending with the cessation of the supply of fuel to the boiler.

24. "South Coast Power Plant Administrative Order" shall refer to the United States Environmental Protection Agency Administrative Order on Consent in In re Puerto Rico Electric Power Authority, No. EPA-CWA-II-92-120 (Sept. 29, 1992).

25. With respect to the Optimization Program, Continuous Monitoring Program, and Operations and Preventive Maintenance Program of Section V of the Consent Decree, "startup" of a Generating Unit shall mean the period beginning when fuel is initially fed to the boiler of a Generating Unit until either the required dispatched load has been attained by the Generating Unit or 50% of the Generating Unit's maximum capacity has been attained, whichever occurs first.

26. "State Implementation Plan" or "SIP" shall mean the applicable state implementation plan, as defined at Section 302q of the Clean Air Act, 42 U.S.C. Section 7602(q), for Puerto Rico, approved by EPA, which provides for the attainment and maintenance of national ambient air quality standards.

27. "Termination," as used in the provisions of the Compliance Programs of this Consent Decree, shall refer both to



termination of this Consent Decree pursuant to paragraph 135 of Section XXVII ("Termination") of this Consent Decree such that the jurisdiction of the Court is no longer retained, and to partial termination of this Consent Decree pursuant to paragraph 136 of Section XXVII ("Termination") of this Consent Decree.

28. "United States" shall mean the United States of America, the U.S. Environmental Protection Agency, and the U.S. Department of Justice acting on behalf of the EPA.

29. "Visible Emissions" shall mean "opacity," as "opacity" is defined in the PRRCAP.

## II. JURISDICTION

30. This Court has jurisdiction over the subject matter of this action and over the Parties to this action pursuant to 28 U.S.C. Sections 1331, 1345, and 1355; Section 113 of the Clean Air Act, 42 U.S.C. § 7413; Section 311(b)(7)(E) of the Clean Water Act, 33 U.S.C. § 1321(b)(7)(E); Section 309(b) of the Clean Water Act, 33 U.S.C. § 1319(b); Section 9006(a) of RCRA, 42 U.S.C. § 6991e(a); Section 113(b) of CERCLA, 42 U.S.C. § 9613(b); and Section 325(c)(4) of EPCRA, 42 U.S.C. § 11045(c)(4). The Complaint states claims upon which relief may be granted. Solely for purposes of this Consent Decree and the underlying Complaint,

Defendant waives all objections and defenses that it may have to jurisdiction of the Court or to venue in this District.

Defendant shall not challenge the terms of this Consent Decree or this Court's jurisdiction to enter and enforce this Consent Decree. Defendant shall identify, on the attached signature page, the name, address, and telephone number of an agent who is authorized to accept service of process by mail on behalf of the Defendant with respect to all matters arising under or relating to this Consent Decree. Defendant hereby agrees to accept service in that manner and to waive the formal service requirements set forth in Rule 4 of the Federal Rules of Civil Procedure and any applicable local rules of this Court, including, but not limited to, service of a summons.

### III. APPLICABILITY

31. The provisions of this Consent Decree shall apply to and be binding upon the United States and PREPA and upon PREPA's officers, directors, agents, employees, servants, successors, assigns, and all persons acting on their behalf.

32. In the event that PREPA proposes to sell or transfer the real property or operations subject to this Consent Decree, PREPA shall provide written notice to EPA Region II and the

United States Department of Justice of such purchaser or transferee in interest at least thirty (30) days prior to the sale or transfer. PREPA shall also provide a copy of this Consent Decree to any person or entity to whom PREPA intends to make any such conveyance at least thirty (30) days prior to any such conveyance, shall condition such conveyance upon agreement by the purchaser or transferee to be subject to the obligations under this Consent Decree and to the jurisdiction of this Court, and shall concurrently verify to EPA Region II and the United States Department of Justice that such notice has been given.

33. PREPA shall provide to each person, firm, corporation, or contractor hired to perform any requirement of this Consent Decree, its Attachments, or Appendices a copy of all sections of this Consent Decree, including its Attachments and Appendices, relevant to the employment of the person, firm, corporation, or contractor, and shall condition all contracts entered into hereunder upon performance of the requirement(s) in conformity with the terms of this Consent Decree, its Attachments, and Appendices. PREPA shall further require that each such person, firm, corporation, or contractor provide written notice of the Consent Decree to all subcontractors hired to perform any portion of any requirement of this Consent Decree. PREPA nonetheless

shall be responsible for ensuring that its contractors and subcontractors perform any such requirements contemplated herein in accordance with this Consent Decree.

34. In any action to enforce this Consent Decree, PREPA shall not raise as a defense the failure by any of its officers, directors, agents, employees, servants, successors, assigns, or persons acting on their behalf to take actions necessary to comply with this Consent Decree.

35. The undersigned representative of PREPA certifies that he or she is fully authorized to enter into the terms and conditions of this Consent Decree, to execute this Consent Decree on behalf of PREPA, and to legally bind PREPA to this Consent Decree.

#### IV. OBJECTIVES

36. The express purpose of the United States and PREPA in entering into this Consent Decree is to further the goals and objectives of the Clean Air Act, Clean Water Act, RCRA, CERCLA, and EPCRA, and the regulations promulgated to implement each of those statutes. Included among those objectives is the goal of reducing air and water pollution by PREPA. All inspections, programs, plans, studies, construction, corrective, or remedial

measures, and other obligations of this Consent Decree shall have the objective of promoting PREPA's compliance with the Clean Air Act, Clean Water Act, RCRA, CERCLA, and EPCRA, and the implementing regulations of those statutes and, thereafter, the objective of fostering compliance with those statutes and regulations.

*NOTE: The paragraph numbering of the following Sections of the Consent Decree begins anew, at paragraph 1, for each of those Sections: Air Compliance Program, the Clean Water Act Compliance Program, the SPCC/Oil Pollution Prevention Compliance Program, the EPCRA Compliance Program, the CERCLA Section 103 and EPCRA Section 304 Compliance Program, the Underground Storage Tank Compliance Program, the Environmental Review Contractor Program, and the Additional Environmental Projects. Paragraph numbering resumes from paragraph 37 at Section XIII ("CIVIL PENALTY") and continues consecutively through the end of this document for all Sections of the Consent Decree that have general application.*

V. CLEAN AIR ACT COMPLIANCE PROGRAM

A. INJUNCTION AGAINST VIOLATIONS OF PRRCAP

PREPA shall operate each Generating Unit in compliance with Rules 403 and 404 of the PRRCAP.

B. PROGRAMS TO ASSURE ACHIEVEMENT AND MAINTENANCE OF AIR COMPLIANCE

1. The objectives of the parties in entering into Section V of the Consent Decree are that PREPA shall:

a. refurbish its Generating Units and operate and maintain each Generating Unit in accordance with the Programs to Assure Achievement and Maintenance of Air Compliance ("Air Compliance Programs") set forth below in paragraphs B.3 through B.12, along with implementation of any additional measures necessary, in order to comply continually with Rules 403 and 404 of the PRRCAP; and

b. operate and maintain its Generating Units in a manner consistent with recognized electrical generating industry practices and standards that include manufacturers' recommendations and standard engineering procedures.

2. PREPA shall develop and implement the Air Compliance Programs, as described more fully in paragraphs B.3 through B.12 of Section V of the Consent Decree and paragraphs B.3 through B.12 of the Section V Air Compliance Attachment ("Air Compliance Attachment"). The Air Compliance Attachment is incorporated herein by reference and is an enforceable part of the Consent Decree. The Air Compliance Programs shall be implemented for the periods specified in paragraphs B.3 through B.12 of the Air Compliance Attachment. Those Programs, which are ongoing, shall remain in effect at least until termination of Section V of the Consent Decree, as provided in Section XXVII ("Termination") of



the Consent Decree. The following is a list of the Air Compliance Programs:

- a. Inspection and Analysis Program;
- b. Hardware Upgrade Program;
- c. Optimization Program;
- d. Continuous Monitoring Program;
- e. Fuel Quality Program;
- f. Spare Parts Inventory Program;
- g. Operations and Preventive Maintenance Programs;
- h. Economizer Sootblower Installation Program;
- i. Balanced Draft Conversion Program; and
- j. Opacity Monitor Installation Program.

3. Inspection and Analysis Program. On or before the date of entry of the Consent Decree, PREPA shall inspect and analyze each Generating Unit and the hardware components of each Generating Unit that affect or potentially affect PREPA's ability to operate and maintain such Generating Unit in compliance with Rule 403 of the PRRCAP. Based on this inspection and analysis, PREPA shall make determinations as to the hardware upgrade activities necessary to ensure compliance with Rule 403 of the PRRCAP. The Inspection and Analysis Program shall comply with

all specific requirements set forth in paragraph B.3 of the Air Compliance Attachment.

4. Hardware Upgrade Program. On or before the date of entry of the Consent Decree, for each Generating Unit, PREPA shall upgrade the hardware components that affect or potentially affect PREPA's ability to operate and maintain such Generating Unit in compliance with Rule 403 of the PRRCAP. Hardware upgrade shall include all necessary installation, calibration, refurbishment, and/or replacement of any and all hardware components of each Generating Unit to ensure compliance with Rule 403 of the PRRCAP. The Hardware Upgrade Program shall comply with all specific requirements set forth in paragraph B.4 of the Air Compliance Attachment.

5. Optimization Program. In accordance with the specific requirements of paragraph B.5 of the Air Compliance Attachment, PREPA shall establish Optimal Operating Ranges necessary to ensure compliance of each Generating Unit with Rule 403 of the PRRCAP. On or before the date of entry of the Consent Decree, PREPA shall implement and maintain the established Optimal Operating Ranges and, thereafter, revise, adjust, and/or modify such Optimal Operating Ranges in accordance with the specific requirements of paragraph B.5 of the Air Compliance Attachment.

The Optimization Program shall comply with all specific requirements set forth in paragraph B.5 of the Air Compliance Attachment.

6. Continuous Monitoring Program. On or before the date of entry of the Consent Decree, PREPA shall develop and implement a Continuous Monitoring Program for each Generating Unit to ensure that the Optimal Operating Ranges established pursuant to the Optimization Program are achieved and maintained and to ensure that compliance with Rule 403 of the PRRCAP is achieved and maintained. The Continuous Monitoring Program shall comply with all specific requirements set forth in paragraph B.6 of the Air Compliance Attachment.

7. Fuel Quality Program. On or before the date of entry of the Consent Decree, and thereafter until termination of Section V of the Consent Decree, in each Generating Unit, PREPA shall combust fuel that meets the specifications of paragraph B.7.a of the Air Compliance Attachment in order to achieve and maintain compliance with Rule 403 of the PRRCAP. The Fuel Quality Program shall comply with all specific requirements set forth in paragraph B.7 of the Air Compliance Attachment.

8. Spare Parts Inventory Program. On or before the date of entry of the Consent Decree, and thereafter until termination

of Section V of the Consent Decree, PREPA shall develop and maintain a Spare Parts Inventory and a Spare Parts Inventory Tracking System, at each Power Plant, that ensures the continuous operation of each Generating Unit in compliance with Rule 403 of the PRRCAP. The Spare Parts Inventory Program shall comply with all specific requirements set forth in paragraph B.8 of the Air Compliance Attachment.

9. Operations and Preventive Maintenance Programs. On or before the date of entry of the Consent Decree, except as provided in the Air Compliance Attachment at paragraph B.9, and thereafter until termination of Section V of the Consent Decree, PREPA shall develop and implement Operations and Preventive Maintenance ("O&M") Programs that, at a minimum, consist of the following elements:

- a. operations and preventive maintenance checklists for each Generating Unit;
- b. operations and preventive maintenance activities;
- c. visible emission readings;
- d. operations manuals for each Power Plant;
- e. an Air Compliance Program Course for all Power Plant and Environmental Protection and Quality Assurance Division personnel involved with or responsible for any aspect of air compliance or implementation of any Air Compliance Program in the Consent Decree; and

f. management review and reporting.

The Operations and Preventive Maintenance Programs shall comply with all specific requirements and schedules set forth in paragraph B.9 of the Air Compliance Attachment.

10. Economizer Sootblower Installation Program. In addition to any sootblowers existing prior to the entry of the Consent Decree, by the dates provided in paragraph B.10.b of the Air Compliance Attachment, PREPA shall install and operate two sootblowers at the economizer of each Generating Unit in order to ensure long-term operation of each Generating Unit in compliance with Rule 403 of the PRRCAP. The Economizer Sootblower Installation Program shall comply with all specific requirements and schedules set forth in paragraph B.10 of the Air Compliance Attachment.

11. Balanced Draft Conversion Program. PREPA shall convert the following Generating Units from pressurized Generating Units to balanced draft Generating Units: San Juan 7, 8, 9, and 10, and Palo Seco 3 and 4. The Balanced Draft Conversion Program shall comply with all specific requirements and schedules set forth in paragraph B.11 of the Air Compliance Attachment.

12. Opacity Monitor Installation Program. PREPA shall complete installation of new opacity monitors at the stacks of each Generating Unit as soon as possible, but no later than September 30, 1998, to ensure long-term operation of each Generating Unit in compliance with Rule 403 of the PRRCAP. The Opacity Monitor Installation Program shall comply with all applicable requirements set forth in paragraph B.6 of the Air Compliance Attachment and all specific requirements of paragraph B.12 of the Air Compliance Attachment.

13. Modification of Air Compliance Programs.

a. If, at any time prior to the termination of Section V of the Consent Decree, PREPA determines that achievement and maintenance of compliance with Rule 403 of the PRRCAP will be achieved more effectively by modifying the procedures or checklists of the Spare Parts Inventory Program or the Operations and Preventive Maintenance Programs required by Section V of the Consent Decree, PREPA shall promptly implement such modification, provided such modification is in accordance with the objectives of the Air Compliance Attachment. PREPA shall submit to EPA, in its Air Compliance Status Reports, a description of any modification implemented pursuant to this



paragraph during the preceding quarter and the reason(s) for such modification.

b. The United States and PREPA reserve their rights to seek modification of any of the Air Compliance Programs pursuant to Section XXIII ("Modification") of the Consent Decree.

C. NONCOMPLIANCE WITH RULES 403 and 404 of the PRRCAP

1. On or before the date of entry of the Consent Decree, PREPA shall operate each Generating Unit in compliance with Rules 403 and 404 of the PRRCAP.

2. If, at any time after the date of entry of the Consent Decree, PREPA fails to operate any Generating Unit in compliance with Rule 403 or 404 of the PRRCAP, PREPA shall:

a. notify EPA of such noncompliance in a manner in which EPA will receive such notification within the next working day;

b. implement, as applicable, corrective measures required by the Continuous Monitoring, Fuel Quality, Spare Parts Inventory, and/or Operations and Preventive Maintenance Programs, to bring the relevant Generating Unit into compliance with Rules 403 and 404 of the PRRCAP. Such corrective measures include, but are not limited to, appropriate revisions of the Spare Parts Inventory Program and/or the Operations and Preventive

Maintenance Programs; these Programs include repair or replacement of any hardware component that affects PREPA's ability to operate and maintain such Generating Unit in compliance with Rules 403 and 404 of the PRRCAP; and

c. within five (5) working days of completion of the corrective measures described in paragraph 2.b above, submit to EPA a report, prepared by the Plant Manager at whose Power Plant the violation occurred, that contains the following:

- (1) a description of the violation(s) of Rule 403 or 404 of the PRRCAP;
- (2) a description of the action(s) taken to correct the violation(s);
- (3) a certification that such corrective action(s) were taken; and
- (4) an identification of the date on which such violation(s) ceased.

3. In the event that any corrective action requires the removal of any Generating Unit from service for evaluation, diagnostics, repairs, replacements, or other such purposes:

a. when, as determined by the Head of the Operations Division, there is sufficient reserve generating capacity immediately available, and transfer of available electric power would not adversely affect the reliability of power supply to any

geographic area, PREPA shall remove, within two hours, the relevant Generating Unit from service in order to implement such corrective action; or

b. when, as determined by the Head of the Operations Division, there is insufficient reserve generating capacity immediately available, or where transfer of available electric power would adversely affect the reliability of power supply to any geographic area, PREPA shall remove the relevant Generating Unit from service as soon as possible, but no later than the first Saturday after the violation, in order to implement such corrective action.

4. If, at any time after the date of entry of the Consent Decree, PREPA fails to operate such Generating Unit in compliance with Rule 403 of the PRRCAP, PREPA shall be subject to Stipulated Penalties for any such violations, as provided in the "Stipulated Penalties" Section of the Consent Decree.

D. QUARTERLY REPORTING

1. Within (30) days of the end of each Quarter, until termination of Section V of the Consent Decree, PREPA shall submit, to EPA Region II and the EPA Region II Caribbean Environmental Protection Division, a report ("Air Compliance Status Report"). Each Air Compliance Status Report shall include

all the items required by paragraph C of the Air Compliance Attachment.

2. PREPA shall not be precluded from including in any report required under Section V of the Consent Decree relevant information or data that is not expressly required by Section V of the Consent Decree.

E. INDEPENDENT AIR COMPLIANCE AUDITOR PROGRAM

1. Within sixty (60) days of the date of entry of the Consent Decree, PREPA shall notify EPA, in writing, of the name, title, and qualifications of at least three (3) proposed contractors and provide the basis for considering each of them capable of performing the functions of the Air Compliance Auditor. Each Air Compliance Auditor that PREPA proposes shall not be:

a. a past or present employee or past or present contractor of PREPA, EPA, EQB, or their agents or representatives; or

b. an employee or contractor of any other contractor, agent, or representative employed by PREPA, EPA, or EQB to perform any other requirements of Section V of the Consent Decree.

2. With respect to each Air Compliance Auditor that PREPA proposes, EPA will provide to PREPA a written Notification of Deficiency or a written Authorization to Proceed.

3. Within twenty (20) days of receipt of a written Authorization to Proceed from EPA, PREPA shall select the Air Compliance Auditor(s) with respect to whom EPA has granted Authorization to Proceed and PREPA shall notify EPA, in writing, of its selection.

4. Within 120 days of receipt of a written Authorization to Proceed from EPA, PREPA shall contract with an Independent Air Compliance Auditor ("Air Compliance Auditor") for purposes of verifying the accuracy of submissions made by PREPA pursuant to paragraphs B, C, and D above, and paragraph H below, of Section V of the Consent Decree. The Air Compliance Auditor shall comply with all the requirements set forth in paragraph D of the Air Compliance Attachment.

5. PREPA shall not hire an Air Compliance Auditor unless EPA has provided PREPA an express, written Authorization to Proceed with respect to such proposed Air Compliance Auditor.

6. PREPA shall not be obliged to expend in excess of \$125,000 per year in direct contract costs for the Air Compliance Auditor.

F. DETERMINATIONS IN THE EVENT OF NONCOMPLIANCE

1. If EPA determines that there are recurring, egregious, or persistent violations of Rule 403 of the PRRCAP, EPA may send PREPA a written Notification of Determination that will include a request for a meeting within fifteen (15) days of receipt of such a Notification. Such Notification of Determination will include an EPA request that PREPA shall:

- a. conduct Interim Mitigation Measures in accordance with paragraphs F.9 through F.12 below; and
- b. install and/or conduct (an) Air Pollution Control Measure(s) in accordance with paragraphs F.13 through F.17 below.

2. If EPA determines that there are recurring, egregious, or persistent violations of Section V of the Consent Decree and/or Rule 403 of the PRRCAP, EPA may send PREPA a written Notification of Determination that will include a request for a meeting within fifteen (15) days of receipt of such a Notification. Such Notification of Determination will include an EPA request that PREPA shall hire (an) Oversight Contractor(s) in accordance with paragraphs F.18 through F.20 below.

3. The decision regarding whether to initiate proceedings in accordance with the terms of paragraph F shall lie within the



sole discretion of EPA. Nothing in paragraph F shall be construed to limit in any way EPA's ability to proceed under paragraph I ("Reservation of Rights") at any time.

4. Activities requested by EPA pursuant to paragraph F.1 and/or F.2, above, are "Additional Compliance Activities."

5. Within thirty (30) days of receipt of EPA's Notification of Determination, PREPA shall send EPA a written Response to EPA's Notification of Determination ("Notification of Response"). In PREPA's Notification of Response, PREPA shall notify EPA as to whether or not PREPA agrees to conduct the Additional Compliance Activities requested by EPA. If PREPA notifies EPA that it agrees to conduct the requested Additional Compliance Activities ("Notification of Affirmative Response"), such agreement shall not be construed to be an admission of violation of either Section V of the Consent Decree, or Rule 403 of the PRRCAP.

6. If PREPA submits a Notification of Affirmative Response pursuant to paragraph F.5 above, PREPA shall conduct the requested Additional Compliance Activities in accordance with the applicable provisions of paragraphs F.9 through F.20 below.

7. If PREPA's Notification of Response pursuant to paragraph F.5, above, indicates that PREPA does not agree to

conduct the Additional Compliance Activities requested by EPA in the Notification of Determination, or if PREPA does not submit a Notification of Response within the required time period, EPA reserves its rights to pursue any further enforcement actions it deems appropriate, pursuant to paragraph I ("Reservation of Rights"), below.

8. Based on information PREPA may submit, EPA may, at any time, rescind a Notification of Determination issued pursuant to paragraph F.1 or F.2 above.

9. Interim Mitigation Measures. If EPA sends a Notification of Determination pursuant to paragraph F.1 above, as soon as possible, but no later than twenty (20) days after PREPA's submission of a Notification of Affirmative Response, PREPA shall achieve and maintain compliance with Rule 403 by, at a minimum, undertaking one of, or a combination of, the following Interim Mitigation Measures:

- a. implementation of a revised water-washing schedule that provides for increased water-washing frequency while assuring minimal corrosion;
- b. combustion of fuel with reduced sulfur, asphaltene, and vanadium content.

10. If EPA sends a Notification of Determination pursuant to paragraph F.1 above, as soon as possible, but no later than

twenty (20) days after PREPA's submission of a Notification of Affirmative Response, PREPA shall submit to EPA an Interim Mitigation Plan. The Interim Mitigation Plan shall include a discussion of the measures that PREPA shall employ to achieve and maintain compliance with Rule 403 of the PRRCAP.

11. The Interim Mitigation Plan, submitted in accordance with paragraph F.10 above, shall include:

a. an explanation and description of any Interim Mitigation Measure and any other actions undertaken by PREPA to assure compliance with Rule 403 of the PRRCAP;

b. the basis for, and data and/or documentation in support of, PREPA's determination that any such measure and any other such action will assure compliance with Rule 403 of the PRRCAP; and

c. an explanation, description, and schedule of any Interim Mitigation Measure to be undertaken should PREPA determine that both measures set forth in paragraphs F.1.a and F.1.b are necessary to achieve compliance with Rule 403 of the PRRCAP.

12. Any Interim Mitigation Plan, submitted pursuant to paragraphs F.10 and F.11 above, shall be subject to the EPA

Review Process provided in paragraph H of Section V of the Consent Decree.

13. Air Pollution Control Measures. If EPA sends a Notification of Determination, pursuant to paragraph F.1 above, within 180 days of submission of PREPA's Notification of Affirmative Response, PREPA shall submit to EPA an Air Pollution Control Measure Plan. The Air Pollution Control Measure Plan shall include a detailed engineering discussion of measures PREPA will employ to maintain compliance with Rule 403 of the PRRCAP. Such measures may include, but need not be limited to, the following:

- a. conversion or modification of burners;
- b. baghouses with limestone injection;
- c. scrubbers;
- d. electrostatic precipitators;
- e. conversion to natural gas; and/or
- f. long-term lowering of sulfur and vanadium content of fuel combusted.

14. Any Air Pollution Control Measure Plan, submitted in accordance with paragraph F.13 above, shall include:

- a. an explanation and description of the air pollution control measure(s) planned by PREPA;

b. the basis for, and data and/or documentation in support of, PREPA's basis for its determination that such measure(s) shall assure compliance with Rule 403 of the PRRCAP; and

c. a schedule for the expeditious implementation and completion of any air pollution control measure(s) which shall not, in any case, exceed thirty (30) months for any measure or combination of measures.

15. Any Air Pollution Control Measure Plan shall be subject to the EPA Review Process provided in paragraph H of Section V of the Consent Decree.

16. If, at any time during implementation of a schedule submitted pursuant to paragraph F.14.c above, PREPA determines that it cannot comply with such schedule, PREPA may apply to EPA in writing for a modification or extension of the schedule. PREPA's application for modification or extension of the schedule shall include the following based upon information available at the time of application:

- a. an explanation and description of the reasons for the delay using supporting documentation and data;
- b. the anticipated duration of the delay;

c. all actions attempted to prevent or planned to minimize the delay; and

d. a revised schedule.

17. Any application for modification or extension of an Air Pollution Control Measure Plan schedule will be subject to the EPA Review Process provided at paragraph H of Section V of the Consent Decree.

18. Oversight Contractor(s). If EPA sends PREPA a Notification of Determination pursuant to paragraph F.2 above, within twenty (20) days after PREPA's submission of a Notification of Affirmative Response PREPA shall submit to EPA an Oversight Contractor Plan. The Oversight Contractor Plan shall include:

- a. a description of each activity the Oversight Contractor(s) will conduct, the specific operations of each Power Plant that the Oversight Contractor(s) will oversee, and/or the specific aspects of any Air Compliance Program the Oversight Contractor(s) will oversee;
- b. the anticipated date of commencement and completion of each activity described in paragraph F.18.a above;
- c. the basis for PREPA's determination that any Oversight Contractor selected is qualified to conduct the activities described in paragraph F.18.a above.

19. If EPA sends PREPA a Notification of Determination pursuant to paragraph F.2 above, within sixty (60) days after PREPA's submission of a Notification of Affirmative Response, PREPA shall hire (an) Oversight Contractor(s) to conduct activities described in its Oversight Contractor Plan submitted pursuant to paragraph F.18 above.

20. Any Oversight Contractor, hired by PREPA in accordance with paragraph F.19 above, shall, within thirty (30) days after the end of each Quarter, submit a Quarterly Oversight Contractor Report, to both EPA and PREPA, that describes the activities the Oversight Contractor conducted and the assessments the Oversight Contractor made during the preceding Quarter.

21. General Provisions Relating to Paragraph F.

a. PREPA shall organize, compile, retain, and make available to EPA upon request, all documentation generated in connection with activities conducted pursuant to paragraph F of Section V of the Consent Decree. Such documentation shall include, but shall not be limited to, records of all data, observations, and results of testing generated by any Oversight Contractor.

b. Implementation of any Air Pollution Control Measure and/or the hiring of any Oversight Contractor shall not



extend the time for, or excuse compliance with, any other requirement of this Consent Decree, including the requirement to comply with Rules 403 and 404 of the PRRCAP.

c. Nothing in paragraph F shall preclude PREPA from undertaking, at any time, any activities to ensure compliance with Section V of this Consent Decree and/or Rule 403 of the PRRCAP, including, but not limited to, any activities similar to those that could be requested by EPA pursuant paragraphs F.1 and/or F.2 above.

G. CERTIFICATION

1. Certification by PREPA's Power Plant Managers shall (except with respect to the Optimization Program, Spare Parts Inventory Program, and Operations and Preventive Maintenance Programs) consist of the following language:

I certify, to the best of my knowledge and belief, that the information contained in or accompanying this submission was prepared under my supervision by qualified personnel who properly gathered and evaluated the information contained in the submission. I further certify that I have reviewed the information submitted and, to the best of my knowledge and belief, it is true, accurate, and complete.

2. Certification by PREPA's Electrical System Director in connection with Inspection and Analysis Program, Hardware Upgrade

Program, and Optimization Program Summary Reports and Quarterly Air Compliance Program Status Reports shall consist of the following language:

In my capacity as the Electrical System Director of PREPA, I hereby certify, under penalty of law, that the information contained in or accompanying this submission was prepared by qualified personnel who properly gathered and evaluated the information submitted. I further certify, based on a reasonable inquiry of the person or persons responsible for gathering such information, that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

3. Certification by PREPA's Fuel Administrator, Head of Purchasing Division, Head of Maintenance and Technical Services, Head of the Environmental Protection and Quality Assurance Division, and Plant Managers (with respect to the Optimization Program, Spare Parts Inventory Program, and Operations and Preventive Maintenance Programs) shall consist of the following language:

I certify, to the best of my knowledge and belief, that the information contained in or accompanying this submission was prepared by qualified personnel who properly gathered and evaluated the information contained in the submission. I further certify that I have reviewed the information submitted and, to the best of my knowledge and belief, it is true, accurate, and complete.

H. EPA Review

1. All Section V submissions made by PREPA, except those submitted pursuant to paragraph F.18 above, shall be subject to the review process set forth below:

a. If EPA determines that a Section V submission is incomplete, inadequate, and/or inaccurate, or is otherwise not in accord with this Consent Decree, EPA will send PREPA a written Notification of Deficiency. The Notification of Deficiency will include the basis for the notification, and may include questions, suggestions, requests for clarification, and/or comments.

b. Within sixty days of receipt of a Notification of Deficiency, PREPA shall submit to EPA a response to EPA's Notification of Deficiency ("Response"). The Response shall include answers to all questions, suggestions, requests, clarifications, comments and/or revisions to the submission that was the subject of the Notification of Deficiency, and technical justifications and demonstrations using sampling analysis where necessary to document such Response.

c. If EPA explicitly requests PREPA to cease ongoing work in a Notification of Deficiency, PREPA may cease such work

upon receipt of such Notification or dispute such Notification pursuant to the Dispute Resolution Process. PREPA shall be required to cease such work where Dispute Resolution requires such action.

2. After the review process described in paragraph H.1 above, the parties may invoke Section XV ("Dispute Resolution") of the Consent Decree to contest a Notification of Deficiency.

I. Reservation of Rights

The United States reserves the right to seek additional injunctive relief in the event of any violation of the requirements of the Consent Decree or the SIP including, but not limited to, violations of Rule 403 or 404 of the PRRCAP. Such injunctive relief may include, but need not be limited to, the enforcement of Interim Mitigation Plans and Air Pollution Control Measure Plans required pursuant to paragraph F of Section V of the Consent Decree and/or the orderly retirement of noncompliant Generating Units. Nothing in this paragraph shall be construed as an agreement by PREPA to perform any injunctive relief that is not required by this Consent Decree which the United States may seek under this paragraph.

VI. CLEAN WATER ACT COMPLIANCE PROGRAM

1. PREPA shall undertake the actions set forth in Section VI of this Consent Decree to achieve and maintain compliance with the Clean Water Act, the regulations promulgated thereunder, and all NPDES permits applicable to PREPA's Power Plants. PREPA shall adhere to the Compliance Action Schedule and each Interim Effluent Limitations Table set forth below in Section VI of this Consent Decree.

Part I: Compliance Actions

2. PREPA shall undertake the compliance actions set forth below, as specified for each Power Plant, in accordance with the schedule ("Compliance Action Schedule") provided:

<u>PLANT</u>	<u>COMPLIANCE ACTION</u>	<u>COMPLIANCE DEADLINE</u>
<b>SAN JUAN PLANT</b>		
	a. Plant Drainage System (Internal Waste Stream ("IWS") 001C): Complete plant drainage/oil separator improvements and modifications	04/30/98
	b. Automatic pH Control System for Cooling Tower (IWS 001D): Complete construction	03/18/97
	c. Re-Direction of Low pH Cooling Tower Blowdown to Wastewater Treatment Plant	

(IWS 001D): Complete project

04/19/97

d. Outfall 001 Compliance

- (1) Achieve compliance with NPDES permit effluent limitations at Outfall 001 with respect to Temperature

Last Effective Date<sup>1</sup>

- (2) Achieve compliance with NPDES permit effluent limitations at Outfall 001 with respect to Plant Drainage

05/01/98

- (3) Achieve compliance with NPDES permit effluent limitations at Outfall 001 for Metal Scrap Storage Project

07/01/98

e. Wastewater Treatment Plant (IWS 003A)

- (1) Complete wastewater treatment plant optimization

11/22/96

- (2) Submit wastewater treatment plant status report to EPA, and achieve compliance with NPDES permit limitations applicable at IWS 003A

12/02/96

If compliance with NPDES permit limitations applicable at IWS 003A is not achieved on or before November 30, 1996, PREPA shall

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<sup>1</sup>The Last Effective Date will be identified upon EPA's final determination regarding PREPA's Section 316 variance request. Such determination, and any challenge to such determination, shall be made pursuant to the applicable procedures set forth in the Clean Water Act and the regulations promulgated thereunder.

commence a post-treatment project pursuant to which it shall

- |     |   |          |
|-----|---|----------|
| (a) | submit plans and specifications;  | 01/31/97 |
| (b) | commence construction of the post-treatment project;  | 12/05/97 |
| (c) | complete construction of the post-treatment project; and  | 06/30/98 |
| (d) | achieve compliance with NPDES permit effluent limitations applicable at IWS 003A                        | 08/31/98 |
| f.  | Outfall 002: Achieve compliance with NPDES permit effluent limitations at Outfall 002                   | 09/01/98 |
| g.  | Air Preheater Washwater Sump Improvements (Outfalls 002 and 003)  |          |
| (1) | Complete assessment and investigation, and recommend corrective measures                                | 01/31/97 |
| (2) | Prepare and submit plans and specifications   | 05/31/97 |
| (3) | Complete installation and startup   | 01/31/98 |
| h.  | Minor Thermal Streams (Outfall 003)   |          |
| (1) | Complete investigation and assessment at Outfall 003, and recommend thermal control corrective measures | 01/31/97 |
| (2) | Prepare and submit plans and specifications   | 05/31/97 |
| (3) | Complete construction and installation  | 04/30/98 |
| i.  | Fuel Oil Heater Cooling System pH Control (003)   |          |
| (1) | Complete investigation and assessment, and recommend control measures                                   | 04/18/97 |



- (2) Prepare and submit plans and specifications 09/30/97
  - (3) Complete construction and installation 09/30/98
- j. Outfall 003: Achieve Compliance with NPDES permit effluent limitations at Outfall 003 10/01/98
- k. Metal Scrap Storage Facility (Outfalls 001, 002, and 003)
  - (1) Prepare and submit plans and specifications 07/31/97
  - (2) Complete construction 06/30/98

#### **PALO SECO PLANT**

- l. Outfall 001A: Achieve compliance with NPDES permit effluent limitations at Outfall 001A 05/01/98
- m. Minor Thermal Streams (Outfall 001B)
  - (1) Complete investigation and assessment at Outfall 001B, and recommend corrective measures, including zero discharge 12/31/96
  - (2) Prepare and submit plans and specifications 04/01/97
  - (3) Complete construction and installation 03/31/98
- n. Outfall 001B Compliance
  - (1) Achieve compliance with NPDES permit effluent limitations at Outfall 001B for Minor Thermal Streams Project 04/01/98

- (2) Achieve compliance with NPDES permit effluent limitations at Outfall 001B for Metal Scrap Storage Project 05/01/98
- o. Fuel Oil Heater Cooling System pH Control (Outfall 001C)
  - (1) Complete investigation and assessment, and recommend control measures 04/18/97
  - (2) Prepare and submit plans and specifications 08/31/97
  - (3) Complete construction and installation 09/30/98
- p. Minor Thermal Streams (Outfall 001C)
  - (1) Complete investigation and assessment at Outfall 001C, and recommend thermal control corrective measures 01/31/97
  - (2) Prepare and submit plans and specification 05/31/97
  - (3) Complete construction and installation 05/31/98
- q. Wastewater Treatment Plant (IWS 001C1)
  - (1) Complete re-routing of polisher wastewater to Equalization Tank No. 3 at Wastewater Treatment Plant 11/30/96
  - (2) Complete assessment and submit Wastewater Treatment Plant Status Report for IWS 001C1, and achieve compliance with NPDES permit effluent limitations at Outfall 001C 12/31/96

If the assessment required above indicates that compliance with NPDES permit effluent limitations at Outfall 001C is not achieved on or before December 31, 1996, PREPA shall commence a final effluent process adjustment project, pursuant to which PREPA shall

- (a) prepare and submit plans and specifications 04/30/97
  - (b) complete construction and installation; and 03/31/98
  - (c) achieve compliance with NPDES permit effluent limitations at Outfall 001C for the following parameters: Cu, pH max, and Fe 05/31/98
- r. Outfall 001C: Achieve compliance with NPDES permit effluent limitations at Outfall 001C 10/01/98
- s. Outfall 002: Achieve compliance with NPDES permit effluent limitations at Outfall 002 05/01/98
- t. Metal Scrap Storage Facility (Outfalls 001A, 001B, 001C, and 002)
  - (1) Prepare and submit plans and specifications 07/31/97
  - (2) Complete construction 04/30/98

#### **AGUIRRE POWER COMPLEX**

- u. Relocation of Major Repair Activities (Outfalls 001 and 003): complete relocation of major repair activities from condenser intake area 06/30/97

v. Outfall 001 Compliance

Achieve compliance with NPDES  
permit effluent limitations at  
Outfall 001 with respect to  
Temperature                      Date of Entry of Consent Decree

w. Fuel Oil Heaters (Outfall 002)

- (1) Complete installation of new  
fuel oil heater elements 06/30/97
- (2) Complete installation and  
startup of oil and grease  
on-line detectors at fuel  
oil heaters and on console  
alarm system 06/30/97

x. Boiler Blowoff (Outfall 002): complete  
corrective measures 12/31/96

y. Minor Thermal Streams (Outfall 002)

- (1) Complete investigation and  
assessment at Outfall 002,  
and recommend thermal control  
corrective measures 04/30/97
- (2) Prepare and submit plans  
and specifications 08/31/97
- (3) Complete construction and  
installation 10/31/98

z. Air Preheater Sump (Outfall 002)

- (1) Prepare and submit plans and  
specifications for repairs/  
re-construction 04/01/97
- (2) Complete repairs/re-construction 04/30/98

- aa. Fuel Oil Heater Cooling System pH Control (Outfall 002)
  - (1) Complete investigation and assessment, and recommend control measures 04/30/97
  - (2) Prepare and submit plans and specifications 09/30/97
  - (3) Complete construction and installation 09/30/98
- bb. Outfall 002: Achieve compliance with NPDES permit effluent limitations at Outfall 002 11/01/98
- cc. Wastewater Treatment Plant (IWS 003a)
  - (1) Submit plans and specifications for final effluent process adjustments 04/01/97
  - (2) Complete construction and startup of final effluent process adjustments 06/30/98
  - (3) Achieve compliance with NPDES permit effluent limitations at IWS 003a 08/31/98
- dd. Outfall 003: Achieve compliance with NPDES permit effluent limitations at Outfall 003 09/01/98
- ee. Steam Generator Blowoff Recovery (Outfall 004): complete corrective measures 12/31/96
- ff. Minor Thermal Streams (Outfall 004)
  - (1) Complete investigation and assessment at Outfall 004,

	and recommend thermal control corrective measures	03/31/97
	(2) Prepare and submit plans and specifications	07/31/97
	(3) Complete construction and installation	05/31/98
gg.	Settling Basin Modifications (Outfall 004)	
	(1) Prepare and submit plans and specifications for re-design of settling basin no. 3	04/01/97
	(2) Complete construction	06/30/98
hh.	Outfall 004 Compliance	
	(1) Achieve compliance with NPDES permit effluent limitations at Outfall 004 for Minor Thermal Streams and Settling Basin Projects	07/01/98
	(2) Achieve compliance with NPDES permit effluent limitations at Outfall 004 for Metal Scrap Storage Project	09/01/98
ii.	Metal Scrap Storage Facilities (Outfalls 002, 003, and 004)	
	(1) Prepare and submit plans and specifications	07/31/97
	(2) Complete construction	08/31/98
jj.	Toxicity Testing: Commence sampling	01/02/97

## SOUTH COAST PLANT

- kk. Wastewater Treatment Plant Upgrade  
(IWS 001f)
  - (1) Submit plans and specifications for Wastewater Treatment Plant upgrade 02/28/97
  - (2) Complete upgrade construction and startup 02/28/99
  - (3) Achieve compliance with NPDES permit effluent limitations at IWS 001f 04/30/99
- ll. Boiler Blowoff (Outfall 001): Complete corrective measures 12/31/96
- mm. Outfall 001 Compliance
  - (1) Achieve compliance with NPDES permit effluent limitations at Outfall 001 with respect to Temperature Date of Entry of Consent Decree
  - (2) Achieve compliance with NPDES permit effluent limitations at Outfall 001 for Metal Scrap Storage Project 05/01/98
  - (3) Achieve compliance with NPDES permit effluent limitations at Outfall 001 for Wastewater Treatment Plant Upgrade Project 04/30/99
- nn. Outfalls 002 and 003 Compliance: Achieve compliance with NPDES permit effluent limitations at Outfalls 002 and 003 05/01/98



oo. Metal Scrap Storage Facility (Outfalls 001, 002, and 003)

(1) Prepare and submit plans and specifications

07/31/97

(2) Complete construction

04/30/98

pp. Toxicity Testing: commence sampling

01/02/97

Part II: Interim Effluent Limitations

3. PREPA shall comply with the interim effluent limitations set forth in each Interim Effluent Limitations Table (the "Interim Limits Table" or "Table") at paragraph 8.<sup>2</sup>

4. The interim effluent limitations set forth in the Interim Limits Tables shall apply until the "Last Effective Date" established for each parameter at each outfall.

5. The measurement frequency and sample type of any parameter that is the subject of any interim effluent limitation set forth in the Interim Limits Table of Section VI of the Consent Decree shall be the same as the measurement frequency and

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<sup>2</sup>With respect to the temperature parameter associated with Outfall 001 at the Aguirre Power Complex, PREPA shall comply with the effluent limitation of 41.1°C set forth in the applicable existing permit. With respect to the temperature parameter associated with Outfall 001 at the Costa Sur Plant, PREPA shall comply with the effluent limitation of 41.7 °C set forth in the applicable existing permit.

sample type specified in PREPA's applicable NPDES permit in effect unless an alternative is specified in the applicable Interim Limits Table. The effluent limitation for any parameter that is not the subject of any interim effluent limitation set forth in the Interim Limits Table of Section VI of the Consent Decree shall be the effluent limitation established for that parameter in PREPA's applicable NPDES permit in effect.

6. All monitoring shall be performed in accordance with the applicable NPDES permit in effect for each Power Plant unless otherwise specified in Section VI of the Consent Decree.

7. PREPA has undertaken corrective actions pursuant to the Administrative Orders at the Palo Seco, Aguirre, and South Coast Power Plants. PREPA also has undertaken corrective actions at the San Juan Power Plant. As a result, the configuration of some outfalls and/or internal waste streams at the Power Plants have been modified. See Letter from PREPA (Angel Luis Rivera-Santana) to EPA (Patrick Durack), dated November 15, 1996, regarding "Current Outfall or Internal Waste Stream Descriptions" (the "Outfall/IWS Configuration Letter"). PREPA shall continue to discharge its effluents from its Power Plants through the outfalls and internal waste streams as currently described and

configured in the Outfall/IWS Configuration Letter until such configurations are incorporated into PREPA's renewal NPDES permits.

8. The Interim Limits Tables:

a.

INTERIM LIMITS TABLE FOR SAN JUAN STEAM PLANT  
NPDES PERMIT NO. PR0000698

OUTFALL No.	PARAMETER	INTERIM LIMIT	LAST EFFECTIVE DATE	PROJECT
001	Temperature	40.8°C	None specified <sup>3</sup>	§ 316 Variance
001	Cd	98 ug/l	6/30/98	Metal Scrap Storage
001	TSS (max)	104 mg/l	6/30/98	Metal Scrap Storage
001	Mn	120 ug/l	6/30/98	Metal Scrap Storage

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<sup>3</sup>The Last Effective Date will be identified upon EPA's final determination regarding PREPA's Section 316 variance request. Such determination, and any challenge to such determination, shall be made pursuant to the applicable procedures set forth in the Clean Water Act and the regulations promulgated thereunder.

OUTFALL No.	PARAMETER	INTERIM LIMIT	LAST EFFECTIVE DATE	PROJECT
001	Fe	670 ug/l	6/30/98	Metal Scrap Storage
001	Phenolics	20 ug/l	4/30/98	Plant Drainage
001	Cu	80 ug/l	6/30/98	Metal Scrap Storage
001	Ag	10 ug/l	6/30/98	Metal Scrap Storage
001	Pb	36.6 ug/l	6/30/98	Metal Scrap Storage
001C	TSS (max)	70 mg/l	4/30/98	Plant Drainage
001C	TSS (avg)	37 mg/l	4/30/98	Plant Drainage
002	Zn	114 ug/l	6/30/98	Metal Scrap Storage
002	Ag	6.0 ug/l	6/30/98	Metal Scrap Storage
002	Fe	762 ug/l	6/30/98	Metal Scrap Storage
002	Turbidity	11 NTU	6/30/98	Metal Scrap Storage

OUTFALL No.	PARAMETER	INTERIM LIMIT	LAST EFFECTIVE DATE	PROJECT
002	Phenolics	23 ug/l	1/31/98	Air Preheater Washwater Sump
002	pH (max)	8.9 SU	11/30/96 <sup>4</sup>	WWTP
002	pH (min)	5.9 SU	1/31/98	Air Preheater Washwater Sump
002	DO (min)	3.6 mg/l	1/31/98	Air Preheater Washwater Sump
003	Temperature	39.1°C	4/30/98	Minor Thermal Streams
003	Ag	6 ug/l	6/30/98	Metal Scrap Storage
003	Fe	3410 ug/l	6/30/98	Metal Scrap Storage
003	Zn	166 ug/l	6/30/98	Metal Scrap Storage

<sup>4</sup>In the event that compliance with San Juan Power Plant NPDES permit effluent limitations at Outfall 002 is not achieved on or before November 30, 1996, and, as a result, PREPA commences a post-treatment project pursuant to paragraphs 2.e(2)(a) through 2.e(2)(d) above, the "Last Effective Date" of the interim effluent limitation applicable to the pH (max) parameter for Outfall 002 shall be extended to August 30, 1998.

OUTFALL No.	PARAMETER	INTERIM LIMIT	LAST EFFECTIVE DATE	PROJECT
003	Phenolics	31 ug/l	1/31/98	Air Preheater Washwater Sump
003	pH (min)	4.8 SU	9/30/98	Fuel Oil Heater Cooling System pH Control
003	DO (min)	2.0 mg/l	4/30/98	Minor Thermal Streams
003	Pb	33 ug/l	6/30/98	Metal Scrap Storage
003A	Flow (max)	0.864 MGD	Permit Renewal	N/A

b.

INTERIM LIMITS TABLE FOR PALO SECO STEAM PLANT  
NPDES PERMIT NO. PR0001031

OUTFALL No.	PARAMETER	INTERIM LIMIT	LAST EFFECTIVE DATE	PROJECT
001A	Fe	600 ug/l	4/30/98	Metal Scrap Storage
001A	Cu	110 ug/l	4/30/98	Metal Scrap Storage

OUTFALL No.	PARAMETER	INTERIM LIMIT	LAST EFFECTIVE DATE	PROJECT
001A	Zn	80 ug/l	4/30/98	Metal Scrap Storage
001B	Cu	123 ug/l	4/30/98	Metal Scrap Storage
001B	Temperature	62.4 °C	3/31/98	Minor Thermal Streams
001B	Zn	290 ug/l	4/30/98	Metal Scrap Storage
001B	pH (max)	8.8 SU	3/31/98	Minor Thermal Streams
001B	TSS (avg)	43 mg/l	4/30/98	Metal Scrap Storage
001B	COD	112 mg/l	3/31/98	Minor Thermal Streams
001B	pH (min)	6.4 SU	3/31/98	Minor Thermal Streams



OUTFALL No.	PARAMETER	INTERIM LIMIT	LAST EFFECTIVE DATE	PROJECT
001C	Cu	60 ug/l	12/31/96 <sup>5</sup>	WWTP Final Effluent Process Adjustment
001C	Zn	118 ug/l	4/30/98	Metal Scrap Storage
001C	Fe	658 ug/l	12/31/96 <sup>6</sup>	WWTP Final Effluent Process Adjustment

<sup>5</sup>In the event that compliance with Palo Seco Power Plant NPDES permit effluent limitations at Outfall 001C is not achieved on or before December 31, 1996, and, as a result, PREPA commences a final effluent process adjustment project pursuant to paragraphs 2.q.(2)(a) through 2.q(2)(c) above, the "Last Effective Date" of the interim effluent limitation applicable to the Cu parameter for Outfall 001C shall be extended to May 30, 1998.

<sup>6</sup>In the event that compliance with Palo Seco Power Plant NPDES permit effluent limitations at Outfall 001C is not achieved on or before December 31, 1996, and, as a result, PREPA commences a final effluent process adjustment project pursuant to paragraphs 2.q(2)(a) through 2.q(2)(c) above, the "Last Effective Date" of the interim effluent limitation applicable to the Fe parameter for Outfall 001C shall be extended to May 30, 1998.

OUTFALL No.	PARAMETER	INTERIM LIMIT	LAST EFFECTIVE DATE	PROJECT
001C	pH (max)	9.3 SU	12/31/96 <sup>7</sup>	WWTP Final Effluent Process Adjustment
001C	pH (min)	6.8 SU	9/30/98	Fuel Oil Heater Cooling System pH Control
001C	Temperature	37.9° C	5/31/98	Minor Thermal Streams
002	TSS (avg)	75.5 mg/l	4/30/98	Metal Scrap Storage

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<sup>7</sup>In the event that compliance with Palo Seco Power Plant NPDES permit effluent limitations at Outfall 001C is not achieved on or before December 31, 1996, and, as a result, PREPA commences a final effluent process adjustment project pursuant to paragraphs 2.q(2)(a) through 2.q(2)(c) above, the "Last Effective Date" of the interim effluent limitation applicable to the pH (max) parameter for Outfall 001C shall be extended to May 30, 1998.

C.

INTERIM LIMITS TABLE FOR AGUIRRE POWER COMPLEX  
NPDES PERMIT NO. PR0001660

OUTFALL No.	PARAMETER	INTERIM LIMIT	LAST EFFECTIVE DATE	PROJECT
002	Temperature	45°C	10/31/98	Minor Thermal Streams
002	Fe	516 ug/l	8/31/98	Metal Scrap Storage
002	pH (max)	11.1 SU	9/30/98	Fuel Oil Heater
002	pH (min)	6.7 SU (min)	9/30/98	Fuel Oil Heater
002	Ag	3.4 ug/l	8/31/98	Metal Scrap Storage
003	TSS (max)	121 mg/l	8/31/98	Metal Scrap Storage
003	TSS (avg)	93 mg/l	8/31/98	Metal Scrap Storage
003	Cu	84 ug/l	8/31/98	Metal Scrap Storage
003	pH (max)	8.9 SU	8/30/98	WWTP Final Effluent Process Adjustment
003A	Fe	1.5 mg/l	8/30/98	WWTP Final Effluent Process Adjustment
004	Temperature	35.2°C	5/31/98	Minor Thermal Streams

OUTFALL No.	PARAMETER	INTERIM LIMIT	LAST EFFECTIVE DATE	PROJECT
004	Phenolics	22 ug/l	5/31/98	Minor Thermal Streams
004	Zn	90.2 ug/l	8/31/98	Metal Scrap Storage
004	pH (max)	8.9 SU	6/30/98	Settling Basin
004	pH (min)	7.11 SU	6/30/98	Settling Basin

d.

INTERIM LIMITS TABLE FOR SOUTH COAST STEAM PLANT  
NPDES PERMIT NO. PR 0001147

OUTFALL No.	PARAMETER	INTERIM LIMIT	LAST EFFECTIVE DATE	PROJECT
001f	Fe	1.6 mg/l	04/29/99	WWTP Upgrade
002	TSS	71 mg/l	4/30/98	Metal Scrap Storage
003	TSS	329.5 mg/l	4/30/98	Metal Scrap Storage

### Part III: Quarterly Reporting

9. In accordance with the schedules set forth below in paragraphs 10, 11, 12, and 13, until termination of Section VI of this Consent Decree, PREPA shall submit to EPA a written report for each quarter ("Quarterly Status Report") detailing the current status and/or progress of each action taken pursuant to Section VI of this Consent Decree. The Quarterly Status Reports shall, at a minimum, set forth:

a. the specific activities undertaken by PREPA relating to completion of work required under the Consent Decree, and PREPA's compliance with all other provisions of Section VI of this Consent Decree accomplished since the previous Quarterly Status Report; and

b. any impediment encountered by PREPA in meeting the Compliance Action Schedule specified in Section VI of this Consent Decree, and the steps taken by PREPA to overcome such impediment.

10. Within thirty (30) days of entry of the Consent Decree, and thereafter on March 20, June 20, September 20, and December 20 of each calendar year until termination of

Section VI of the Consent Decree, PREPA shall submit to EPA a Quarterly Status Report regarding the San Juan Power Plant.

11. Upon entry of the Consent Decree, on February 20, May 20, August 20, and November 20 of each calendar year until termination of Section VI of the Consent Decree, PREPA shall submit to EPA a Quarterly Status Report regarding the Palo Seco Power Plant. In satisfaction of this requirement, PREPA may submit the "quarterly status report" required by paragraph 11.A of the Palo Seco Power Plant Administrative Order.

12. Upon entry of the Consent Decree, on January 20, April 20, July 20, and October 20 of each calendar year until termination of Section VI of the Consent Decree, PREPA shall submit to EPA a Quarterly Status Report regarding the Aguirre Power Plant. In satisfaction of this requirement, PREPA may submit the "quarterly status report" required by paragraph 14.A of the Aguirre Power Plant Administrative Order.

13. Upon entry of the Consent Decree, on March 20, June 20, September 20, and December 20 of each calendar year until termination of Section VI of the Consent Decree, PREPA shall submit to EPA a Quarterly Status Report regarding the South Coast Power Plant. In satisfaction of this requirement, PREPA may

submit the "quarterly status report" required by paragraph 10 of the South Coast Power Plant Administrative Order.

14. Each report required pursuant to Section VI of the Consent Decree shall be signed by PREPA's Director of Planning and Environmental Protection with the following certification:

"I hereby certify, under penalty of law, that the information contained in or accompanying this submission was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. I further certify, based on my inquiry of the person or persons responsible for gathering such information, that the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

VII. SPCC/OIL POLLUTION PREVENTION COMPLIANCE PROGRAM

1. PREPA shall operate each of its Facilities in compliance with the Oil Pollution Prevention and Spill Prevention Control and Countermeasure ("SPCC") requirements of the Clean Water Act and the regulations promulgated thereunder. PREPA shall perform the actions set forth in this Section of the Consent Decree to maintain compliance with the SPCC requirements of the Clean Water Act and the SPCC regulations promulgated thereunder.

Part I: SPCC Plans

2. Within fifteen (15) days of entry of this Consent Decree, PREPA shall submit to EPA for review and approval an SPCC Plan for the San Juan Power Plant.

3. Within thirty-five (35) days of entry of this Consent Decree, PREPA shall submit to EPA for review and approval an SPCC Plan for the Palo Seco Power Plant.

4. Within fifty-five (55) days of entry of this Consent Decree, PREPA shall submit to EPA for review and approval an SPCC Plan for the Aguirre Power Plant.

5. Within seventy-five (75) days of entry of this Consent Decree, PREPA shall submit to EPA for review and approval an SPCC Plan for the Costa Sur Power Plant.

6. Within ninety-five (95) days of entry of this Consent Decree, PREPA shall submit to EPA for review and approval an SPCC Plan for the Monacillos Transmission Center.

7. Each SPCC Plan required by paragraphs 2 through 6 above shall comply with all applicable requirements of the Clean Water Act, the regulations promulgated thereunder, and the format for SPCC Plans recommended by EPA Region II and agreed to by PREPA



("SPCC Format"). The SPCC Format is attached to this Consent Decree as the "SPCC Compliance Attachment." As agreed, prior to the entry of this Consent Decree, EPA made the SPCC Compliance Attachment available to PREPA on diskette.

8. EPA will review the SPCC Plans submitted pursuant to paragraphs 2 through 6 above, and will inform PREPA, in writing, of EPA's approval, approval subject to modification, or disapproval of each such SPCC Plan, in whole or in part, and the specific grounds for any disapproval.

9. In the event that EPA disapproves of an SPCC Plan, in whole or in part, within sixty (60) days of receipt of EPA's disapproval, PREPA shall revise and re-submit such SPCC Plan for EPA review and approval.

10. Upon re-submission of an SPCC Plan pursuant to paragraph 9 above, EPA will review such SPCC Plan and inform PREPA, in writing, of EPA's approval, approval subject to modification, or disapproval of the SPCC Plan, in whole or in part, and the specific grounds for any disapproval.

Part II: Spill Prevention Maintenance and Construction Program

11. PREPA shall design and implement a Spill Maintenance and Construction Program for each Facility.

12. Within forty-five (45) days of entry of the Consent Decree, PREPA shall submit to EPA, for review and approval, a Spill Prevention Maintenance and Construction Program Plan ("Spill Maintenance and Construction Program Plan") for each PREPA Facility. Each Spill Maintenance and Construction Program Plan shall address the following at each Facility, as necessary:

- a. repair leaks at all pipe valves, fuel and oil transfer pumps, tanks, and other equipment;
- b. close and maintain closure of all drain (rain) valves at tank drainage areas and secondary containment areas, consistent with the regulations set forth at 40 C.F.R. Section 112.7, except those under appropriate supervision;
- c. lock, cap, or plug all tank drain valves and pipe purge valves;
- d. lock, cap or, plug all secondary containment valves;
- e. remove oil-saturated soil and/or drums located near any soil stain that occurred as a result of a spill;

- f. remove oil present in all diked areas;
- g. provide secondary containment, where required by 40 C.F.R. § 112.7, for all tanks, drums, or containers;
- h. construct secondary containment and provide interlocking warning system for all loading/unloading racks or pads or implement any other appropriate system where required by 40 C.F.R. Section 112.7(e)(4)(iii);
- i. provide for secondary containment integrity by fortifying those secondary containment areas that are eroded, cracked, have insufficient storage capacity, or are not compatible with stored material;
- j. redesign and reconstruct earthen walls surrounding facility pipes that are constructed through such earthen walls and which lead to any coastal waters or, in the alternative, use a jacket to prevent spills through the pipe wall to the surface and/or soil;
- k. maintain all skimming systems free of oil in the last skimmer compartment leading to navigable waters;
- l. replace or repair all drain valves; and
- m. replace packing materials located at all valves that have leaked or are currently leaking.

13. EPA will review the Spill Maintenance and Construction Program Plan and inform PREPA, in writing, of EPA's approval, approval subject to modification, or disapproval of the Plan, in whole or in part, and the specific grounds for any disapproval.

14. In the event that EPA disapproves of a Spill Maintenance and Construction Program Plan, in whole or in part, PREPA shall revise the Plan and re-submit the Plan for EPA review and approval.

15. Upon re-submission of a Spill Maintenance and Construction Program Plan pursuant to paragraph 14 above, EPA will review the Plan and inform PREPA, in writing, of EPA's approval, approval subject to modification, or disapproval of the Plan, in whole or in part, and the specific grounds for any disapproval.

16. Upon receipt of written EPA approval or approval subject to modification, PREPA shall commence all work activities in accordance with the approved schedules set forth in the Spill Maintenance and Construction Program Plan. PREPA shall complete such work activities in accordance with the approved schedules of the Spill Maintenance and Construction Program Plan.

17. Within ninety-five (95) days of completion of the Spill Maintenance and Construction Program, PREPA shall prepare and

submit to EPA a Spill Maintenance and Construction Program Final Report that includes the following: (a) a synopsis of any deficiency discovered during the Spill Maintenance and Construction Program; and (b) a synopsis of the steps taken to correct such deficiency.

18. The Spill Maintenance and Construction Program Final Report shall be prepared by each of PREPA's Plant Managers, and shall be certified by PREPA's Electrical System Director as follows:

In my capacity as the Electrical System Director of PREPA, I hereby certify, under penalty of law, that the information contained in or accompanying this submission was prepared by qualified personnel who properly gathered and evaluated the information submitted. I further certify, based on a reasonable inquiry of the person or persons responsible for gathering such information, that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

### Part III: SPCC Coordinator Program

19. Within forty-five (45) days of entry of this Consent Decree, PREPA shall submit to EPA, for review and approval, an SPCC Coordinator Program Workplan that, at a minimum, describes the specific responsibilities of each SPCC Coordinator and outlines the resources that will be allocated to accomplish the objectives of the SPCC Coordinator Program.

20. Pursuant to the SPCC Coordinator Program, PREPA shall develop at each Facility a position for a full-time SPCC Coordinator who will work on matters related to all SPCC requirements under Section VII of this Consent Decree. PREPA shall assign, for a period of at least two years, a full-time SPCC Coordinator at each Facility to work on matters related to SPCC Plans and to coordinate at each Facility activities and construction designed to prevent the release of oil and hazardous substances into the navigable waters of the United States.

21. PREPA shall provide each SPCC Coordinator with sufficient resources to ensure that any SPCC Plan, including any related physical design and construction, is developed and implemented such that it complies with all SPCC requirements of Section VII of this Consent Decree.

VIII. EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW  
ACT COMPLIANCE PROGRAM

1. PREPA shall operate each of its Facilities in compliance with the Emergency Planning and Community Right-To-Know Act ("EPCRA"). PREPA shall perform the actions set forth in this Section of the Consent Decree to maintain compliance with Section 312 of EPCRA, 42 U.S.C. § 11022, and the regulations promulgated thereunder.

Part I: Tier I/Tier II Forms for Reporting Periods Prior  
to Entry of the Consent Decree

2. Within forty-five (45) days of entry of this Consent Decree, in accordance with Section 312 of EPCRA, 42 U.S.C. § 11022, and the regulations promulgated thereunder, PREPA shall submit to the appropriate local emergency planning committee, the Commonwealth emergency response commission, the fire department with jurisdiction over each Facility, and to EPA Region II Tier I or Tier II Emergency and Hazardous Chemical Inventory Forms for hazardous chemicals that, prior to the entry of this Consent Decree, have not been reported as required by Section 312(a) of EPCRA, 42 U.S.C. § 11022(a).

3. All submissions made pursuant to the preceding paragraph shall be accompanied by a cover letter explaining that the submissions relate to hazardous chemicals that PREPA failed to report, as required, in previous calendar years, and that the submissions are made pursuant to a settlement agreement between the United States (on behalf of the U.S. Environmental Protection Agency) and PREPA.

4. Such submissions shall be sent by certified mail, return receipt requested, to all persons or entities identified above in paragraph 2. In accordance with Section XVI ("Right of Entry and Access to Information") and Section XVII ("Retention of Records") of this Consent Decree, PREPA shall maintain, on file at each Facility, certifications of the mailing and receipt of the submissions as well as copies of the actual submissions.

Part II: Tier I/Tier II Forms for Reporting Periods  
Following Entry of the Consent Decree

5. Upon entry of this Consent Decree, PREPA shall comply with Section 312 of EPCRA, 42 U.S.C. § 11022, and the regulations promulgated thereunder. PREPA shall submit all hazardous chemical inventory forms prepared in accordance with Section 312 of EPCRA, 42 U.S.C. § 11022 to EPA Region II in addition to the



persons or entities identified in Sections 312(a)(1)(A)-(C).

6. All submissions made pursuant to the preceding paragraph shall be sent by certified mail, return receipt requested, to all persons or entities identified above in paragraph 5. In accordance with Section XVI ("Right of Entry and Access to Information") and Section XVII ("Retention of Records") of this Consent Decree, PREPA shall maintain, on file at each Facility, certifications of the mailing and receipt of the submissions as well as copies of the actual submissions.

IX. CERCLA SECTION 103 and EPCRA SECTION 304 COMPLIANCE PROGRAM

1. PREPA shall operate each of its Facilities in compliance with Section 103 of the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA") and Section 304 of EPCRA. PREPA shall perform the actions set forth in this Section of the Consent Decree to achieve and maintain compliance with Section 103 of CERCLA and Section 304 of EPCRA, and the regulations promulgated thereunder.

Part I: Compliance with CERCLA Section 103 and EPCRA Section 304

2. Upon entry of this Consent Decree, PREPA shall comply with Section 103 of CERCLA, 42 U.S.C. § 9603, and the regulations promulgated thereunder.

3. Upon entry of this Consent Decree, PREPA shall comply with Section 304 of EPCRA, 42 U.S.C. § 11004, and the regulations promulgated thereunder.

Part II: In-House Release Prevention Program

4. Within sixty (60) days of entry of this Consent Decree, PREPA shall submit to EPA, for review and approval, an In-house Release Prevention Program Plan ("IRP Program Plan") designed to prevent the release of hazardous substances into the environment from PREPA's Facilities. The IRP Program Plan shall include a study of areas where releases occur, the cause of such releases, the addition or construction of controls and increased safety procedures designed to eliminate such releases, and appropriate schedules for the implementation of such addition or construction of controls and increased safety procedures.

Part III: CERCLA Section 103 and EPCRA Section 304  
Training Program

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5. Within sixty (60) days of entry of this Consent Decree, PREPA shall submit to EPA, for review and approval, the curriculum for an In-House Release Prevention Program Training Seminar ("IRP Program Training Seminar") designed to (a) be presented to all PREPA employees and contractors who have control over or may come into contact with any hazardous substance at PREPA's Facilities; and (b) inform such PREPA employees and contractors of the notification requirements of Section 103 of CERCLA, 42 U.S.C. § 9603, and Section 304 of EPCRA, 42 U.S.C. § 11004.

6. The IRP Program Training Seminar shall be designed to be presented in English and Spanish.

7. The IRP Program Training Seminar shall be presented in a one-hour session to PREPA's contractors who have control over or may come into contact with any hazardous substance at PREPA's Facilities, and in a six-hour session to PREPA employees who have control over or may come into contact with any hazardous substance at PREPA's Facilities. The IRP Program Training Seminar shall be presented at least twice a year, for at least three consecutive years. The IRP Program Training Seminar shall

be presented to any new PREPA employee who has control over or may come into contact with any hazardous substance at PREPA's Facilities within six (6) months of the employee's assumption of responsibilities at the Facilities.

8. PREPA shall develop written materials to be used in conjunction with the IRP Program Training Seminars. Such materials shall be distributed to all attendees of the seminars, shall be available in both English and Spanish, and shall include an explanation, prominently displayed in the materials, that the seminar is being presented pursuant to a settlement agreement between the United States (on behalf of the U.S. Environmental Protection Agency) and PREPA.

9. Within twenty-four (24) months of the date of entry of this Consent Decree, PREPA shall certify in writing that "every PREPA employee who has control over or may come into contact with any hazardous substance at PREPA's Facilities has attended at least one session of the In-House Release Prevention Program Training Seminar in accordance with the requirements of paragraph 7 above, and has received the seminar materials."

10. Within thirty (30) days of the end of each Quarter, PREPA shall certify in writing that each contractor that had control over or could have come into contact with any hazardous

substance at PREPA's Facilities during the preceding Quarter attended an IRP Program Training Seminar in accordance with the requirements of paragraph 7 above, and received the seminar materials.

11. Within thirty (30) days of the presentation of an IRP Program Training Seminar to any new PREPA employee that has control over or may come into contact with any hazardous substance at PREPA's Facilities, PREPA shall certify in writing that such PREPA employee attended an In-House Release Prevention Program Training Seminar in accordance with the requirements of paragraph 7 above, and received the seminar materials.

#### Part IV: General Provisions Applying to Parts II and III

12. EPA will review the IRP Program Plan described in Part II of this Section, and the curriculum for the IRP Program Training Seminar described in Part III of this Section, and inform PREPA, in writing, of EPA's approval, approval subject to modification, or disapproval, in whole or in part, and the grounds for any disapproval.

13. In the event that EPA disapproves of the IRP Program Plan or the curriculum for the IRP Program Training Seminar, in whole or in part, within sixty (60) days of receipt of EPA's

notice of disapproval, PREPA shall revise and re-submit the IRP Program Plan or the curriculum for the IRP Program Training Seminar for EPA review and approval.

14. Upon re-submission of the IRP Program Plan or the curriculum for the IRP Program Training Seminar pursuant to paragraph 13 above, EPA will review the revised Program Plan or curriculum and inform PREPA, in writing, of EPA's approval, approval subject to modification, or disapproval of the IRP Program Plan or curriculum for the IRP Program Training Seminar, in whole or in part, and the specific grounds for any disapproval.

15. Upon receipt of written EPA approval or approval subject to modification of the IRP Program Plan or the curriculum for the IRP Program Training Seminar, PREPA shall commence, conduct, and complete all work or training in accordance with the approved provisions and/or schedules set forth in IRP Program Plan and the IRP Program Training Seminar curriculum.

16. Within thirty (30) days of completion of the IRP Program, PREPA shall submit to EPA for approval or approval subject to modification an IRP Program Final Report, describing in detail all aspects of the IRP Program as well as a detailed

description of the results. The IRP Program Final Report shall be certified by PREPA's Electrical System Director as follows:

I hereby certify, under penalty of law, that the information contained in or accompanying this submission was prepared by qualified personnel who properly gathered and evaluated the information submitted. I further certify, based on a reasonable inquiry of the person or persons responsible for gathering such information, that the information submitted is, to the best of my knowledge and belief, true, accurate and complete.

17. Within thirty (30) days of completion of the IRP Program Training Seminar, PREPA shall submit to EPA for approval or approval subject to modification, an IRP Program Training Seminar Final Report, describing in detail all aspects of the IRP Program Training Seminar as well as a detailed description of the results. The IRP Program Training Seminar Final Report shall be certified by PREPA's Electrical System Director as follows:

In my capacity as the Electrical System Director of PREPA, I hereby certify, under penalty of law, that the information contained in or accompanying this submission was prepared by qualified personnel who properly gathered and evaluated the information submitted. I further certify, based on a reasonable inquiry of the person or persons responsible for gathering such information, that the information submitted is, to the best of my knowledge and belief, true, accurate and complete.

18. In accordance with Section XVI ("Right of Entry and Access to Information") and Section XVII ("Retention of Records")

of this Consent Decree, PREPA shall maintain, on file at each Facility, all documentation related to the IRP Program and the IRP Program Training Seminar (including, but not limited to, workplans, seminar presentation and attendance records, and written materials distributed at seminars).

19. All submissions made pursuant to this Section shall be sent by certified mail, return receipt requested. In accordance with Section XVI ("Right of Entry and Access to Information") and Section XVII ("Retention of Records") of this Consent Decree, PREPA shall maintain, on file at each Facility, certifications of the mailing and receipt of the submissions as well as copies of the actual submissions.

#### X. UNDERGROUND STORAGE TANK COMPLIANCE PROGRAM

1. PREPA shall comply with the underground storage tank requirements of the Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. § 9003, and the regulations promulgated thereunder.

2. Within thirty (30) days of entry of this Consent Decree, PREPA shall submit to EPA the following certification, signed by the Head of the Environmental Protection and Quality Assurance Division of PREPA:



I hereby certify, under penalty of law, that I have personally examined and am familiar with the information which, to the best of my knowledge, verifies that all underground storage tanks have been permanently closed on site or removed from the PREPA San Juan Power Plant, the Palo Seco Power Plant, the Aguirre Power Plant, and the Monacillos Transmission Center as of the date that PREPA signed this Consent Decree; that, to the best of my knowledge, there are no underground storage tanks present at the Costa Sur Power Plant; and that, based on my inquiry of those individuals immediately responsible for compiling and obtaining the information, I believe that this information is true, accurate, and complete.

3. Within thirty (30) days of entry of this Consent Decree, PREPA shall submit to EPA the following certification, signed by the Head of the Environmental Protection and Quality Assurance Division of PREPA:

I hereby certify, under penalty of law, that I have personally examined and am familiar with the information which, to the best of my knowledge, verifies that any underground storage tank system at the Aguirre Combined Cycle Plant is an emergency spill or overflow containment underground storage tank system that is expeditiously emptied after use and that, based on my inquiry of those individuals immediately responsible for compiling and obtaining the information, I believe that this information is true, accurate, and complete.

4. Within thirty (30) days of entry of this Consent Decree, for all underground storage tanks closed at PREPA's

Facilities since February 7, 1992, PREPA shall submit to EPA all records, maintained in accordance with 40 C.F.R. Section 280.74, that are capable of demonstrating compliance with the closure requirements of Subpart G of 40 C.F.R. Part 280 (including, but not limited to, the results of the assessments required by 40 C.F.R. Section 280.72) and any corrective action taken pursuant to Subpart F of 40 C.F.R. Part 280. Such documentation shall be accompanied by the following certification, signed by the Head of the Environmental Protection and Quality Assurance Division of PREPA:

I hereby certify, under penalty of law, that I am familiar with the information submitted herein and that, based on my inquiry of those individuals immediately responsible for compiling and obtaining the information, I believe that the information submitted is true, accurate and complete.

XI. ENVIRONMENTAL REVIEW CONTRACTOR PROGRAM

1. PREPA agrees to spend \$1,000,000 and the interest thereon to be used for the hiring of an independent party or parties ("Environmental Review Contractor" or "ERC") for the general purpose of reviewing PREPA's implementation of the terms

of this Consent Decree, and informing the public of the activities conducted under this Consent Decree.

2. PREPA shall deposit \$1,000,000 for payment of the ERC into an interest-bearing escrow account established specifically to fund the ERC. PREPA shall deposit these funds as follows: \$200,000 within thirty (30) days of the date of entry of this Consent Decree; and \$200,000 on or before the first, second, third, and fourth anniversary of the date of entry of this Consent Decree. The interest on the escrow account shall be added to the corpus for implementation of the ERC. (Interest from the unexpended balances held in the escrow account shall not be credited against the \$1,000,000 commitment of PREPA.)

3. The ERC selected shall be a local, non-profit, organization with staff that has experience in providing educational, research, training, and technical services to communities, government agencies, and other public and private organizations in the environmental field. The ERC also shall have the ability to communicate in both English and Spanish. The duration of this contract shall be in accordance with paragraph 12 below. In addition, PREPA reserves the right to include in the contract with the ERC a requirement that the ERC submit to routine fiscal auditing by PREPA and/or the Comptroller

of the Commonwealth of Puerto Rico, with respect to activities performed and/or expenditures made under this contract. PREPA shall also have the right to include any other requirement, not inconsistent with the purposes of the ERC Program as set forth herein, deemed appropriate to ensure that the public funds appropriated for this Project are spent in a manner that benefits the people of Puerto Rico.

4. The scope of responsibilities of the ERC shall include: review of documents, data, and reports submitted to EPA by PREPA and/or submitted to the ERC by EPA concerning PREPA's compliance with the provisions of this Consent Decree; on-site inspection of projects being conducted by PREPA under this Consent Decree; provision of a forum for communicating to the communities, PREPA and EPA, on a regular basis, information relating to PREPA's compliance with the provisions of this Consent Decree; and provision of a mechanism for conveying to PREPA and EPA, on a regular basis, community concerns relating to PREPA's compliance with this Consent Decree.

5. Within sixty (60) days of entry of this Consent Decree, PREPA shall submit to EPA an ERC Workplan, including, at a minimum, the following:

a. procedure to be followed by PREPA with respect to contracting with the ERC;

b. procedure for PREPA to provide to the ERC, concurrent with its submissions to EPA, copies of all workplans, data, Air Compliance Status Reports (including, but not limited to, opacity excess emissions, oxygen range, and fuel viscosity data, but not including telemetric data submissions pursuant to Section V of this Consent Decree), Quarterly Status Reports required by Section VI of this Consent Decree, and other submissions required under this Consent Decree;

c. scope of responsibilities of the ERC, at least including:

(1) review of documents, data and reports submitted to EPA by PREPA and/or submitted to the ERC by EPA concerning PREPA's compliance with the provisions of this Consent Decree;

(2) on-site inspection of projects being conducted by PREPA under this Consent Decree;

(3) provision of a forum (at least every sixty (60) days) for communicating to the communities, PREPA, and EPA, information relating to PREPA's compliance with the provisions of this Consent Decree;

(4) provision of a mechanism for periodically (at least every sixty (60) days) conveying to PREPA and EPA community concerns relating to PREPA's compliance with the provisions of this Consent Decree; and

(5) any other provisions, not inconsistent with the purposes of the ERC Program as set forth herein, necessary to ensure the proper application of the public funds deposited by PREPA for this Program.

d. procedures for adequately observing PREPA's visible emissions in affected communities near PREPA's facilities; and

e. procedures for the ERC to maintain a repository, open to the public and accessible to communities located near PREPA's facilities, containing copies of all documents provided to and generated by the ERC.

6. EPA will review the ERC Workplan submitted pursuant to paragraph 5 above, and will inform PREPA, in writing, of EPA's approval, modification and approval, or disapproval of such Workplan, in whole or in part, and the specific grounds for any disapproval.

7. In the event that EPA disapproves of an ERC Workplan, in whole or in part, within thirty (30) days of receipt of EPA's

disapproval, PREPA shall revise and re-submit such Workplan for EPA review and approval.

8. Upon re-submission of an ERC Workplan pursuant to paragraph 7 above, EPA will review such Workplan and inform PREPA, in writing, of EPA's approval, modification and approval, or disapproval of the Workplan, in whole or in part, and the specific grounds for any disapproval.

9. Within thirty (30) days of EPA's approval or modification and approval of the ERC Workplan, PREPA shall notify EPA, in writing, of the names and qualifications of up to three proposed contractors and provide the basis for considering each such contractor capable of performing the functions of the ERC that are set forth above. EPA will review and evaluate the information submitted by PREPA. EPA will use reasonable efforts to seek community input regarding the proposed ERCs. EPA will inform PREPA if any of the proposed contractors qualify based on EPA's review. Within sixty (60) days of receipt of notification from EPA that at least one of the ERCs proposed by PREPA qualifies for the position, PREPA shall enter into a contract with any qualifying ERC, in conformance with the approved ERC Workplan.

10. In the event that EPA determines that none of the contractors proposed by PREPA qualify for the position of ERC, within thirty (30) days of receipt of notification of such determination, PREPA shall submit the names and qualifications of up to three additional contractors and provide the basis for considering each such contractor capable of performing the functions of the ERC that are set forth above.

11. The ERC shall be directed by the Director of EPA's Caribbean Environmental Protection Division and will perform such activities consistent with the approved ERC Workplan and contract as may be directed by the Director of EPA's Caribbean Environmental Protection Division on EPA's behalf.

12. PREPA's contracting mechanism for the ERC shall provide for a one-year contract or contracts, renewable annually until such time as funds deposited in the escrow account, plus interest, are fully expended.

13. EPA and PREPA are under no obligation to implement any recommendation provided by the ERC.

14. All documents or reports submitted to EPA in connection with the ERC Program shall contain the following certification from PREPA, signed by PREPA's Director of Planning and Environmental Protection:



"I hereby certify, under penalty of law, that the information contained in or accompanying this submission was prepared by qualified personnel who properly gathered and evaluated the information submitted. I further certify, based on my inquiry of the person or persons responsible for gathering such information, that the information submitted is true, accurate, and complete.

15. Any failure by PREPA to perform any ERC Program obligation set forth in this Consent Decree or any obligations subsequently established in the approved ERC Workplan shall constitute a violation of this Consent Decree and shall subject PREPA to stipulated penalties as provided in Section XIV ("Stipulated Penalties") of this Consent Decree.

## XII. ADDITIONAL ENVIRONMENTAL PROJECTS

### A. Additional Environmental Projects Coordinators

1. Within ten (10) days of entry of this Consent Decree, PREPA shall designate an Additional Environmental Projects Coordinator ("PREPA's AEP Coordinator"), and shall notify EPA in writing of such designation. The AEP Coordinator shall coordinate with EPA regarding the status of each Additional Environmental Project required under this Section of the Consent Decree. EPA will designate an AEP Coordinator ("EPA's AEP Coordinator") who will be available to coordinate with PREPA's

AEP Coordinator regarding the Additional Environmental Projects. EPA's AEP Coordinator and/or authorized representative shall be allowed to observe any actions taken under this Consent Decree.

B. Fire Department Hazmat Training

1. PREPA agrees to fund, develop and conduct a forty-hour hazardous materials technician-level training program ("Fire Department Hazmat Training"), as defined in 29 C.F.R. Section 1910.120, for the Puerto Rico Fire Department.

2. Within thirty (30) days of entry of this Consent Decree, PREPA shall submit to EPA, for review and approval, a Fire Department Hazmat Training Workplan, compiled pursuant to the procedures outlined in 29 C.F.R. Section 1910.120. This Training will be designed to be presented in both English and Spanish. The Fire Department Hazmat Training Workplan shall establish a program that includes the following features:

a. a request by PREPA that the Puerto Rico Fire Department have at least one representative from each municipality's fire department in attendance;

b. forty (40) hours of Training over a five-day period;

c. course requirements and objectives that ensure that graduates of the Training will be eligible to be certified Hazmat team members;

d. special emphasis in instruction materials on the maintenance and use of the Puerto Rico Fire Department's existing hazardous materials response vehicles; and

e. presentation of the Training by PREPA at least once in each of the following areas: San Juan, Mayagüez, and Ponce.

3. EPA will review the Fire Department Hazmat Training Workplan submitted pursuant to paragraph 2 above, and will inform PREPA, in writing, of EPA's approval, modification and approval, or disapproval of such Workplan, in whole or in part, and the specific grounds for any disapproval.

4. In the event that EPA disapproves of a Fire Department Hazmat Training Workplan, in whole or in part, within thirty (30) days of receipt of EPA's disapproval, PREPA shall revise and re-submit such Workplan for EPA review and approval.

5. Upon re-submission of a Fire Department Hazmat Training Workplan pursuant to paragraph 4 above, EPA will review such Workplan and inform PREPA, in writing, of EPA's approval,

modification and approval, or disapproval of the Workplan, in whole or in part, and the specific grounds for any disapproval.

6. PREPA shall spend at least \$100,000 to accomplish all of the studies, plans, tasks, obligations, and work that PREPA is required to perform pursuant to this subsection of the Consent Decree. PREPA shall implement the Fire Department Hazmat Training over a one-year period in conformance with the requirements of the preceding paragraphs. If PREPA spends less than \$100,000 in completing fully all activities under the Fire Department Hazmat Training Workplan developed pursuant to paragraphs B.1 and B.2 above, then PREPA shall, no later than sixty (60) days after completion of such activities, deposit into the Land Acquisition Fund (established pursuant to paragraph C.2 of Section XII of this Consent Decree) an amount equal to the difference between \$100,000 and the amount PREPA actually spent in completing such activities.

7. Within two (2) years of the date of entry of this Consent Decree, PREPA shall submit a final report detailing all activities completed as part of the Fire Department Hazmat Training program and all expenditures PREPA made as part of this program. Such report shall include, among other things, an accounting of PREPA's expenditures for activities under the Fire

Department Hazmat Training Workplan developed pursuant to paragraphs B.1 and B.2 above. If such expenditures are less than \$100,000, such report shall also include documentation confirming that an amount equal to the difference between \$100,000 and PREPA's actual expenditures have been deposited into the Land Acquisition Fund as required above by paragraph B.6.

8. All documents or reports submitted to EPA in connection with the Fire Department Hazmat Training Project shall contain the following certification from PREPA, signed by PREPA's Director of Planning and Environmental Protection:

"I hereby certify, under penalty of law, that the information contained in or accompanying this submission was prepared by qualified personnel who properly gathered and evaluated the information submitted. I further certify, based on my inquiry of the person or persons responsible for gathering such information, that the information submitted is true, accurate, and complete.

9. All materials developed and distributed for the Hazmat Training pursuant to this subsection of this Decree must display, in a prominent manner, in the language of the material (either Spanish or English), the statement: **"This information was paid for by PREPA as part of its settlement of a lawsuit brought by the United States on behalf of the Environmental Protection Agency."** or **"Esta información fue pagada por la Autoridad de**

Energía Eléctrica como parte de un acuerdo legal con el gobierno de los Estados Unidos en representación de la Agencia de Protección Ambiental Federal."

10. PREPA hereby certifies that, as of the date of entry of this Consent Decree, it is not required to perform or develop the Fire Department Hazmat Training Program by any Federal, state, or local law or regulation; nor is PREPA required to perform or develop the Fire Department Hazmat Training Program by agreement, grant, or as injunctive relief in this or any other case or in compliance with state or local requirements. PREPA further certifies that it has not received and is not presently negotiating to receive credit in any other enforcement action for implementation of the Fire Department Hazmat Training Program.

11. Any failure by PREPA to perform any Fire Department Hazmat Training obligation set forth in this Consent Decree or any obligation subsequently established in the approved Fire Department Hazmat Training Workplan shall constitute a violation of this Consent Decree and shall subject PREPA to stipulated penalties as provided in Section XIV ("Stipulated Penalties") of this Consent Decree.

C. Land Acquisition Project

1. PREPA hereby agrees to spend \$3,400,000, and the interest thereon, to implement this environmental restoration and protection project (hereinafter, the "Land Acquisition Project") to reduce pollution, primarily non-point source, to the Ciénaga Las Cucharillas area. The purpose of this project is to acquire land or interest therein, restore the ecosystem, and manage, into perpetuity, the ecological resources of Ciénaga Las Cucharillas to ensure future environmental benefits.

2. PREPA shall deposit \$3,400,000 for implementation of the Land Acquisition Project into an interest-bearing escrow account (the "Land Acquisition Fund") established specifically to fund this Project. PREPA shall deposit these funds as follows: \$500,000 within thirty (30) days of the date of entry of this Consent Decree; \$970,000 on or before the first anniversary of the date of entry of this Consent Decree, \$970,000 on or before the second anniversary of the date of entry of this Consent Decree, and \$960,000 on or before the third anniversary of the date of entry of this Consent Decree. The interest on the Land Acquisition Fund shall be added to the corpus for implementation of the Land Acquisition Project. (Interest from the unexpended

balances held in the Land Acquisition Fund shall not be credited against the \$3,400,000 commitment of PREPA.) The sum of the \$3,400,000 principal, plus any amount deposited in this Land Acquisition Fund if the Fire Department Hazmat Training is completed for less than \$100,000 (in accordance with paragraph B.6 of Section XII of this Consent Decree), plus the total interest earned on all these funds through fifty-nine (59) months after the date of entry of this Consent Decree, is designated as the "Land Acquisition Funding Amount."

3. All funds deposited in the Land Acquisition Fund (principal and interest) shall only be used for purposes fully consistent with the approved "Land Acquisition Plan" (described in paragraph C.6 below of Section XII of this Consent Decree). None of the funds may be used by PREPA for any administrative or overhead expense.

4. Within sixty (60) days of entry of this Consent Decree, PREPA shall enter into a legally binding contract, with a non-profit group (the "Group") to implement this Land Acquisition Project (the "Land Acquisition Contract"). Both parties anticipate that this non-profit group shall be the Conservation Trust of Puerto Rico.



5. The Land Acquisition Contract shall provide that the Group shall draft and implement a "Land Acquisition Plan" for the Land Acquisition Project. PREPA shall submit the Land Acquisition Plan to EPA for review and approval before it is signed by PREPA and the Group.

6. The Land Acquisition Plan shall contain, at a minimum, provisions to:

a. acquire interests in, or title to, selected parcels of land in the Ciénaga Las Cucharillas area (such interest or title may be held by PREPA or the Group);

b. restore those lands as necessary so that they function as natural open spaces that reduce or prevent pollution;

c. ensure that no more than 10% of the total surface area acquired may be developed for public access or use;

d. ensure that if a leasehold or easement is acquired, it must extend for at least 100 years;

e. ensure that the acquired property is perpetually maintained as a protected area through deed restrictions or covenants consistent with the Land Acquisition Plan and free from uses that are not consistent with ecosystem protection.

f. coordinate the participation of a citizens' advisory committee and the public in the implementation of the Land Acquisition Plan.

g. a proposed budget for the acquisition and any restoration of the property and easements;

h. an inventory of potentially available properties, their size, location, current environmental condition, and any restoration work;

i. relevant criteria for evaluating properties as candidates for protection;

j. an estimate of the cost and efficacy of restoring areas suffering from prior environmental degradation;

k. a schedule for all activities contemplated by the Land Acquisition Plan such that all such activities are completed within five (5) years of the date of entry of this Consent Decree.

7. Within eight (8) months from date of entry of this Consent Decree, PREPA shall submit a draft of the Land Acquisition Plan to EPA for review and comments. EPA will review the draft Land Acquisition Plan and will inform PREPA, in writing, of EPA's approval, modification and approval, or

disapproval of such Plan, in whole or in part, and the specific grounds for any disapproval.

8. Within sixty (60) days of receipt of EPA's comments on the draft Land Acquisition Plan, PREPA shall submit a final Land Acquisition Plan to EPA for review and approval.

9. EPA will review the Land Acquisition Plan submitted pursuant to paragraph C.8 above, and will inform PREPA, in writing, of EPA's approval, modification and approval, or disapproval of such Plan, in whole or in part, and the specific grounds for any disapproval.

10. In the event that EPA disapproves of the Land Acquisition Plan, in whole or in part, within thirty (30) days of receipt of EPA's disapproval, PREPA shall revise and re-submit the Plan for EPA review and approval.

11. Upon re-submission of the Land Acquisition Plan pursuant to paragraph C.10 above, EPA will review such Workplan and inform PREPA, in writing, of EPA's approval, modification and approval, or disapproval of the Plan, in whole or in part, and the specific grounds for any disapproval.

12. The Land Acquisition Plan shall be implemented, provided that the Plan requires that all activities contemplated

therein be completed within five (5) years of the date of entry of this Consent Decree.

13. PREPA shall maintain legible copies of all documentation relating to the development and implementation of the Land Acquisition Project in accordance with Section XVII ("Retention of Records") of this Consent Decree.

14. Beginning with the first calendar year following entry of this Decree, and each calendar year thereafter, PREPA shall provide the United States with an annual progress report detailing all activities taken to implement this Land Acquisition Project. The reports are due on January 30 of each year and shall detail all activities completed in the immediately prior calendar year. Such reports shall include, but need not be limited to:

a. descriptions of the activities conducted during the previous year with relation to this Project, including the status of compliance with the Land Acquisition Plan;

b. a financial report for the previous year that provides information on the amount of money placed into the escrow account, details of any expenditures made during that period, and any expenditures anticipated for the coming year; and

c. a schedule of activities and expenditures anticipated for the coming year to implement this Land Acquisition Project.

15. Within five (5) years and three (3) months of the date of entry of this Consent Decree, PREPA shall submit a final Land Acquisition Project Report. This final report shall include a detailed account of how the Land Acquisition Project was fully implemented, with complete financial accounting.

16. All documents or reports submitted to EPA in connection with the Land Acquisition Project shall contain the following certification from PREPA, signed by PREPA's Director of Planning and Environmental Protection:

"I hereby certify, under penalty of law, that the information contained in or accompanying this submission was prepared by qualified personnel who properly gathered and evaluated the information submitted. I further certify, based on my inquiry of the person or persons responsible for gathering such information, that the information submitted is true, accurate, and complete.

17. All materials developed and distributed as well as any public statement, oral or written, in print, film, or other media, made by PREPA describing this Land Acquisition Project must display in a prominent manner, in the language of the material (either in Spanish or English), the statement: **"This**

Project was funded by PREPA as part of its settlement of a lawsuit brought by the United States on behalf of the Environmental Protection Agency." or "Este proyecto fue pagado por la Autoridad de Energía Eléctrica como parte de un acuerdo legal con el gobierno de los Estados Unidos en representación de la Agencia de Protección Ambiental Federal."

18. PREPA hereby certifies that, as of the date of entry of this Consent Decree, it is not required to perform or develop the Land Acquisition Project by any Federal, state or local law or regulation; nor is PREPA required to perform or develop the Land Acquisition Project by agreement, grant, or as injunctive relief in this or any other case or in compliance with state or local requirements. PREPA further certifies that it has not received, and is not presently negotiating to receive, credit in any other enforcement action for implementation of the Land Acquisition Project.

19. Any failure by PREPA to perform any Land Acquisition Project obligation set forth in this Consent Decree or any obligation subsequently established in the approved Land Acquisition Plan shall constitute a violation of this Consent Decree and shall subject PREPA to stipulated penalties as

provided in Section XIV ("Stipulated Penalties") of this Consent Decree.

*NOTE: Paragraph numbering resumes from paragraph 37 and continues consecutively through the end of this document for the following Sections of the Consent Decree that have general application.*

XIII. CIVIL PENALTY FOR PAST VIOLATIONS

37. PREPA shall pay to the United States a civil penalty totalling one-and-a-half million dollars (\$1,500,000), including Interest, in settlement of all the United States' claims set forth in the Complaint filed in this action, for penalties through the date of entry of this Consent Decree, for PREPA's past violations of the Clean Air Act, Clean Water Act, EPCRA, CERCLA, and RCRA. PREPA shall pay this amount in three installments as follows:

a. within sixty (60) days of the date of entry of this Consent Decree, PREPA shall pay to the United States \$620,000;

b. within eighteen (18) calendar months from the date of entry of this Consent Decree, PREPA shall pay to the United States \$430,000;

c. within thirty (30) calendar months from the date of entry of this Consent Decree, PREPA shall pay to the United States \$450,000.

With respect to each of the three installments, payment shall (a) be paid in the form of certified or cashier's check(s); (b) be made payable to the "Treasurer, United States of America; (c) be mailed to

United States Attorney  
District of Puerto Rico  
Federico Degeteau Federal Building  
Room 452  
Carlos Chardon Avenue  
Hato Rey, Puerto Rico 00918

Reference: PREPA, No. 93-2527;

(d) indicate that the payment is for a civil penalty; and  
(e) refer to DOJ Case Number 90-5-2-1-1750 as well as the name and address of the party making payment. Copies of any check paid pursuant to this Section, and any accompanying transmittal letter shall be sent to the United States as provided in Section XXII ("Form of Notice"). In the event that any payment required by this paragraph is not made when due, Interest shall continue to accrue on the unpaid balance through the date of payment.



#### XIV. STIPULATED PENALTIES

38. PREPA shall be liable to the United States for stipulated penalties in the amounts set forth below in this Section for failure to comply with the requirements of the Consent Decree that are specified below unless such failure is excused under Section XX ("Force Majeure"). "Compliance" by PREPA shall include performance and completion of the activities identified below in accordance with all applicable requirements of law, this Consent Decree and any attachments to this Consent Decree (including schedules), and any plans or other documents approved by EPA pursuant to this Consent Decree.

39. All penalties shall begin to accrue, as applicable, on the day after the complete performance is due or on the day a violation occurs, and shall continue to accrue through the final day of completion of the activity or the correction of the noncompliance. Nothing herein shall prevent the simultaneous accrual of separate penalties for separate violations of this Consent Decree.

40. PREPA shall self-assess and pay to the United States, without prior demand for payment from the United States, stipulated penalties accrued and owing under this Section of the

Consent Decree in accordance with the following procedures: On or before the sixtieth (60th) day following the end of each Quarter, PREPA shall

- a. determine, and provide to EPA a detailed accounting of, the full amount of PREPA's stipulated penalty liability, pursuant to paragraphs 49 through 94 of this Consent Decree, for the preceding Quarter; and
- b. pay to the United States 50% of the amount calculated pursuant to paragraph 40.a above.

Provided PREPA timely follows the procedures set forth above, payment to the United States of the reduced amount specified in sub-paragraph 40.b above shall be deemed to discharge and settle PREPA's liability for stipulated penalties under this Section for the violations that are the subject of such payments. Discharge and settlement as provided in this paragraph shall be available to PREPA only if PREPA makes timely assessment and payment with respect to a particular violation of the Consent Decree during the Quarter in question. In the absence of such timely action by PREPA, PREPA shall be liable for the full amount of the stipulated penalties for such violation during the Quarter in question.

41. In the event that PREPA fails to self-assess and pay stipulated penalties as provided in paragraph 40 above, all penalties accruing under this Section shall be due and payable to the United States within thirty (30) days of PREPA's receipt from EPA of a demand for payment of the penalties unless PREPA invokes the Dispute Resolution procedures of Section XV ("Dispute Resolution") of this Consent Decree.

42. All payments to the United States under this Section shall (a) be paid in the form of certified or cashier's check(s); (b) be made payable to the "Treasurer, United States of America"; (c) be mailed to

United States Attorney  
District of Puerto Rico  
Federico Degeteau Federal Building  
Room 452  
Carlos Chardon Avenue  
Hato Rey, Puerto Rico 00918

Reference: PREPA, No. 93-2527;

(d) indicate that the payment is for stipulated penalties; and  
(e) refer to DOJ Case Number 90-5-2-1-1750 as well as the name and address of the party making payment. Copies of any check paid pursuant to this Section, and any accompanying transmittal letter shall be sent to the United States as provided in Section XXII ("Form of Notice").

43. The payment of stipulated penalties shall not alter in any way PREPA's obligation to complete any requirement under this Consent Decree.

44. During any dispute resolution period, stipulated penalties shall continue to accrue, but payment shall be stayed pending resolution of the dispute in one of the following ways:

a. If the dispute is resolved by agreement of the Parties or by a decision of EPA that is not the subject of formal dispute resolution proceedings, accrued penalties determined to be owing shall be paid to EPA within thirty (30) days of the agreement or receipt of EPA's decision or order;

b. If the dispute is resolved through formal dispute resolution proceedings and the United States prevails in whole or in part, PREPA shall pay all accrued penalties determined by the Court to be owed to EPA within sixty (60) days of receipt of the Court's decision or order, except as provided in paragraph 44.c below.

c. If the dispute is resolved through formal dispute resolution proceedings and the District Court's decision or order is appealed by any Party, PREPA shall pay all accrued penalties determined by the Court of Appeals to be owed to

EPA within sixty (60) days of receipt of the Court of Appeals' decision or order.

45. If PREPA fails to pay stipulated penalties when due, the United States may institute proceedings to collect the penalties as well as Interest. PREPA shall pay Interest on the unpaid balance which shall begin to accrue on the date of demand made pursuant to paragraph 41 above.

46. Nothing in this Consent Decree shall be construed as prohibiting, altering, or in any way limiting the ability of the United States to seek any other remedies or sanctions available by virtue of PREPA's violation of this Decree or of the statutes and regulations upon which this Decree is based.

47. Notwithstanding any other provision of this Section, the United States may, in its unreviewable discretion, waive any portion of stipulated penalties that have accrued pursuant to this Consent Decree.

48. PREPA shall be liable to the United States for stipulated penalties as set forth in paragraphs 49 through 94 of Section XIV of this Consent Decree.

Part I: Stipulated Penalties Related to General  
Provisions of the Consent Decree

49. Stipulated penalties shall be payable to the United States as follows for the failure to pay the Civil Penalty in accordance with the terms of Section XIII ("Civil Penalty") of this Consent Decree (in addition to the payment of Interest on any balance due):

<u>Period of Noncompliance</u>	<u>Penalty Per Violation Per Day</u>
1st thru 15th day	\$ 100
16th thru 30th day	\$ 300
31st day and beyond	\$ 500

50. Stipulated penalties shall be payable to the United States in the amount of \$400 per document for which there was a failure to comply with any requirement of Section XVII ("Retention of Records") of this Consent Decree.

Part II: Stipulated Penalties Related to  
the Environmental Review Contractor Program

51. Stipulated penalties shall be payable to the United States in the amount of \$375 per violation per day for the following ("Type ERC Program Violations"):

a. failure to submit an adequate Environmental Review Contractor Workplan;

b. failure to enter into a legally binding contract with an approved Environmental Review Contractor as required by the Environmental Review Contractor Program;

c. failure to submit to EPA the names and qualifications of three proposed Environmental Review Contractors in accordance with the deadline set forth in paragraph 9 of Section XI of this Consent Decree;

d. failure to submit to EPA any documentation required by paragraph 5, 7, 9, or 10 of the Environmental Review Contractor Program; and

e. failure to submit to the ERC any documentation pursuant to PREPA's obligations in an approved ERC Workplan.

52. Stipulated penalties shall be payable to the United States in the amount of \$750 per violation per day for re-submission, pursuant to paragraph 10 of Section XI of this Consent Decree, of the names and qualifications of proposed Environmental Review Contractors that, after review, EPA does not approve.

53. Stipulated penalties shall be payable to the United States in the amount of \$1,500 per violation per day for failure to deposit the full amount of specified funds into an interest-

bearing escrow account by the deadlines set forth in paragraph 2 of the Environmental Review Contractor Program.

Part III: Stipulated Penalties Related to  
the Additional Environmental Projects

54. Stipulated penalties shall be payable to the United States in the amount of \$375 per violation per day for the following AEP Violations:

- a. failure to submit an adequate Fire Department Hazmat Training Workplan;
- b. failure to submit an adequate Land Acquisition Plan;
- c. failure to enter into a legally binding contract with an appropriate Group for the Land Acquisition Project as required by paragraph C.4 of Section XII of this Consent Decree; and
- d. failure to submit to EPA any documentation required by paragraph B.2., B.7, C.7, C.8, or C.14 of the Fire Department Hazmat Training or Land Acquisition Projects.

55. Stipulated penalties shall be payable to the United States in the amount of \$750 per violation per day for failure to complete performance of all activities specified in the approved



Fire Department Hazmat Training Workplan within twenty (20) months of the date of entry of this Consent Decree.

56. Stipulated penalties shall be payable to the United States in the amount of \$1,000 per violation per day for failure to complete all land acquisitions and remediation activities set forth in the approved Land Acquisition Plan within five (5) years of the date of entry of this Consent Decree.

57. Stipulated penalties shall be payable to the United States in the amount of \$1,500 per violation per day for failure to deposit the full amount of specified funds into the Land Acquisition Fund by the deadlines set forth in paragraph C.2 of the Land Acquisition Project.

58. Stipulated penalties shall be payable to the United States in the amount of 150% of the difference between \$100,000 and the amount that PREPA has spent on the Fire Department Hazmat Training Project for PREPA's failure to spend at least \$90,000 on the Fire Department Hazmat Training Project (excluding any stipulated penalties that PREPA may have paid for any other violations associated with the implementation of that Project) in accordance with paragraph B.6 of Section XII of this Consent Decree.

Part IV: Stipulated Penalties Related to  
Section V of the Consent Decree

59. Stipulated penalties shall be payable to the United States per violation per day for the following ("Tier I Air Violations"):

*Reporting Violations (Timeliness)*

a. failure to submit any Air Compliance Program Summary Report, Quarterly Air Compliance Program Status Report, Notification of Modification of an Optimal Operating Range, or Response to Notification of Deficiency in accordance with the applicable deadline set forth in paragraphs B.3.d, B.4.e, B.5.x, C, or B.5.u of the Air Compliance Attachment or in paragraph H.1.b of Section V of this Consent Decree;

*Reporting Violations (Substance)*

b. failure to submit an Air Compliance Program Summary Report containing, at a minimum

(1) Continuous Monitoring Program Summary Report information required by paragraph B.6.n(1) of the Air Compliance Attachment;

(2) Fuel Quality Program Summary Report information required by paragraph B.7.n.(1) of the Air Compliance Attachment;

(3) Spare Parts Inventory Program Summary Report information required by paragraph B.8.g(1) of the Air Compliance Attachment; or

(4) Operations and Preventive Maintenance Programs Summary Report information required by paragraph B.9.m(1) of the Air Compliance Attachment;

*Continuous Monitoring Program*

c. failure to maintain an alarm for any Monitor in accordance with paragraph B.6.i(5) of the Air Compliance Attachment;

*Optimization Program*

d. failure to submit a Notification of Modification of an Optimal Operating Range containing, at a minimum, the information required by paragraph B.5.u(1) of the Air Compliance Attachment;

*Notification Of Deficiency*

e. failure to submit a Response to a Notification of Deficiency containing the applicable information required by paragraph H.1.b of Section V of the Consent Decree;

*Certification*

f. failure to submit, pursuant to paragraph G.1 of Section V of the Consent Decree, certification required by

paragraphs B.3.c(3), B.4.d(3), and B.6.n(3) of the Air Compliance Attachment;

g. failure to submit, pursuant to paragraph G.2 of Section V of the Consent Decree, certification required by paragraphs B.3.d(3), B.4.e(3), and B.5.x(3) of the Air Compliance Attachment;

h. failure to submit, pursuant to paragraph G.2 of Section V of the Consent Decree, certification of a Quarterly Air Compliance Program Status Report required by paragraph C.3 of the Air Compliance Attachment;

i. failure to submit, pursuant to paragraph G.3 of Section V of the Consent Decree, certification required by paragraphs B.5.w(4), B.7.n(3), B.8.g(3), and B.9.m(3) of the Air Compliance Attachment; and

*Certification of Program Implementation/Completion*

j. failure to submit certification of Air Compliance Program development, completion, and/or implementation as required by paragraphs B.3.d(1), B.4.e(1), B.5.x(1), B.6.o(1), B.7.o(1), B.8.h.(1), B.9.n(1), B.10.c, B.11.c., and B.12.e of the Air Compliance Attachment.

60. Stipulated Penalties for Tier I Air Violations shall be assessed as follows:

<u>Period of Noncompliance</u>	<u>Penalty Per Violation Per Day</u>
1st thru 15th day	\$ 100
16th thru 60th day	\$ 200
61st day and beyond	\$ 500

61. Stipulated penalties shall be payable to the United States per violation per day for the following ("Tier II Air Violations"):

*Reporting Requirements (Substance)*

a. failure to submit an Air Compliance Program Summary Report containing, at a minimum

(1) Inspection and Analysis Program Summary Report information required by paragraph B.3.c(1) of the Air Compliance Attachment;

(2) Hardware Upgrade Program Summary Report information required by paragraph B.4.d(1) of the Air Compliance Attachment; or

(3) Optimization Program Summary Report information required by paragraph B.5.w(1) of the Air Compliance Attachment;

b. failure to submit a Quarterly Air Compliance Program Status Report containing, at a minimum, the information

required by paragraphs C.1 and C.2 of the Air Compliance Attachment;

c. failure to submit a Notification of Response containing, at a minimum, the information required by paragraph F.5 of Section V of the Consent Decree;

d. failure to submit an Interim Mitigation Plan containing, at a minimum, the information required by paragraphs F.10 and F.11 of Section V of the Consent Decree;

e. failure to submit an Air Pollution Control Measure Plan containing, at a minimum, the information required by paragraphs F.13 and F.14 of Section V of the Consent Decree;

f. failure to submit an Oversight Contractor Plan containing, at a minimum, the information required by paragraph F.18 of Section V of the Consent Decree;

g. failure to conduct Optimization Verification Tests in accordance with the Optimization Verification deadline provided at paragraph B.5.p of the Air Compliance Attachment;  
*Continuous Monitoring*

h. failure to install a Monitor in accordance with paragraph B.6.a of the Air Compliance Attachment;

i. failure to repair a Monitor as required by paragraph B.6.a of the Air Compliance Attachment;

j. failure to conduct a quality assurance test of a Monitor as required by paragraph B.6.b of the Air Compliance Attachment;

*Telemetry*

k. failure to transmit information telemetrically in accordance with paragraph B.6.j(1) of the Air Compliance Attachment;

*Fuel Quality*

l. failure to certify a laboratory analysis as required by paragraph B.7 of the Air Compliance Attachment;

m. failure to sample and analyze fuel in accordance with the requirements of, and the methods set forth in, paragraph B.7 of the Air Compliance Attachment;

*Operations and Preventive Maintenance*

n. failure to water-wash each boiler at the frequency required by paragraph B.9.c(5) of the Air Compliance Attachment;

o. failure to steam clean the tubes of each operating Generating Unit in accordance with paragraph B.9.c(6);

p. failure to clean burner tips and guns at the frequency required by paragraph B.9.c(7) of the Air Compliance Attachment; and

q. failure to conduct an Environmental Outage in accordance with paragraph B.9.c(9) of the Air Compliance Attachment.

62. Stipulated Penalties for Tier II Air Violations shall be assessed as follows:

<u>Period of Noncompliance</u>	<u>Penalty Per Violation Per Day</u>
1st thru 15th day	\$ 200
16th thru 60th day	\$ 500
61st day and beyond	\$ 800

63. Stipulated penalties shall be payable to the United States per violation per day for the following ("Tier III Air Violations"):

*Optimization*

a. failure to establish an Optimal Operating Range in accordance with paragraph B.5 of the Air Compliance Attachment;

b. failure to perform Optimization Verification Tests to verify a modified Optimal Operating Range in accordance with paragraph B.5.t(1)(b) of the Air Compliance Attachment;

*Fuel Quality*

c. failure to combust fuel in accordance with the specifications set forth in paragraph B.7.a. of the Air Compliance Attachment;



#### *Economizer Sootblowers*

d. failure to install an additional sootblower at the economizer of a Generating Unit in accordance with the schedule provided in paragraph B.10 of the Air Compliance Attachment;

#### *Balanced Draft Conversion*

e. failure to convert a pressurized Generating Unit to balanced draft in accordance with the schedule provided in paragraph B.11 of the Air Compliance Attachment; and

#### *Additional Compliance Activities*

f. failure to perform Additional Compliance Activities in accordance with the specific requirements of paragraph F of Section V of the Consent Decree.

64. Stipulated Penalties for Tier III Air Violations shall be assessed as follows:

<u>Period of Noncompliance</u>	<u>Penalty Per Violation Per Day</u>
1st thru 15th day	\$ 500
16th thru 60th day	\$ 1,000
61st day and beyond	\$ 1,500

65. Stipulated penalties for the following violations ("Type A Air Violations") shall be payable to the United States, per calendar quarter, in the amount of \$100 per violation:

#### *Recordkeeping*

a. failure to compile records and/or data required to be compiled pursuant to any and all of the Air Compliance Programs of Section V of the Consent Decree and the Air Compliance Attachment;

*Continuous Monitoring*

b. failure to measure, average, or record a required parameter at the frequency required by paragraph B.6.b of the Air Compliance Attachment unless such failure is the result of demonstrated monitor downtime or out-of-control periods of which 5% is allowed;

*Operations and Preventive Maintenance*

c. failure to present the Air Compliance Program Course to Air Compliance Personnel in accordance with paragraph B.9.i of the Air Compliance Attachment; and

d. failure to publish an Operations Manual in Spanish in accordance with paragraph B.9.g of the Air Compliance Attachment.

66. Stipulated penalties for the following violations ("Type B Air Violations") shall be payable to the United States, per calendar quarter, in the amount of \$300 per violation:

*Inspection and Analysis, Operations and Preventive Maintenance*

a. failure to inspect a component listed in paragraph B.3.a(6) of the Air Compliance Attachment in accordance with paragraphs B.3.a(1)-(3) and B.3.a(5) of the Air Compliance Attachment;

*Hardware Upgrade*

b. failure to replace, repair, and/or upgrade a component, or failure to schedule for upgrade a component determined to be deficient during the Inspection and Analysis Program or Operations and Preventive Maintenance Program of the Air Compliance Program;

*Operations and Preventive Maintenance*

c. failure to develop Checklists in accordance with paragraphs B.9.a. and B.9.b of the Air Compliance Attachment;

d. failure to compile or make available to appropriate employees a Manual at each Power Plant in accordance with paragraphs B.9.e and B.9.f of the Air Compliance Attachment;

*Optimization*

e. failure to follow the procedures set forth in Appendix A of the Air Compliance Attachment for establishment of Optimal Operating Ranges;

*Fuel Quality*

f. failure to obtain a certified laboratory analysis from the fuel supplier prior to receipt of any shipment as required by paragraph B.7.c of the Air Compliance Attachment;

g. failure to provide taps for sampling and/or failure to fill containers in accordance with paragraph B.7.i. of the Air Compliance Attachment;

*Spare Parts*

h. failure to develop and maintain a Spare Parts Tracking System in accordance with paragraph B.8.b of the Air Compliance Attachment;

*Operations and Preventive Maintenance*

i. failure to conduct an inspection which utilizes the Operations Checklists and Preventive Maintenance Checklists developed pursuant to paragraphs B.9.a and B.9.b of the Air Compliance Attachment; and

j. failure, except where Method 9 conditions are not met, to conduct and record a bi-weekly visible emissions reading in accordance with paragraph B.9 of the Air Compliance Attachment.

67. Stipulated penalties for the following violations

("Type C Air Violations") shall be payable to the United States, per calendar quarter, in the amount of \$500 per violation:

*Inspection and Analysis*

a. failure to conduct an inspection of a Generating Unit in accordance with the requirements of the Inspection and Analysis Program of the Air Compliance Program; and

*Operations and Preventive Maintenance*

b. failure to develop an Air Compliance Program Course in accordance with paragraph B.9.i of the Air Compliance Attachment.

*Visible Emissions*

68. Stipulated penalties for operation of a Generating Unit in any manner that results in noncompliance with Rule 403(A) of the PRRCAP shall be assessed as specified in the following chart. For purposes of determining the compliance of any Generating Unit with Rule 403(A) of the PRRCAP, the opacity of visible emissions shall be measured utilizing either:

a. 40 C.F.R. Part 60, Reference Method 9 ("Method 9"); or

b. opacity monitors installed pursuant to paragraphs B.12 of Section V of this Consent Decree and the Air Compliance Attachment.

For purposes of assessing stipulated penalties hereunder, each six-minute averaging period in which the average opacity, as determined pursuant to Method 9, exceeds the limits of Rule 403(A) of the PRRCAP shall constitute a separate violation.

For purposes of assessing stipulated penalties hereunder, any period of six consecutive minutes in which the average opacity, as measured by the opacity monitors installed pursuant to paragraphs B.12 of Section V of the Consent Decree and the Air Compliance Attachment, exceeds the limits of Rule 403(A) of the PRRCAP shall constitute a separate violation. Six-minute averaging periods using measurements from such opacity monitors shall not be overlapping; that is, the measurements which contribute to the calculated average opacity for any such averaging period may not also be used in the calculation of average opacity for any other six minute period. The total number of six-minute averaging periods in a single day for which the average opacity is within one of the three ranges specified in the following chart (i.e., greater than 20% to 40%, greater than 40% to 60%, and greater than 60%) will determine the applicable stipulated penalty Type; such six-minute averaging periods need not be consecutive.

Stipulated Penalty Provisions Applicable  
to Violations of Rule 403(A) of the PRRCAP

Stipulated Penalty Type	Six-Minute Periods at > 20% to 40% Opacity	Six-Minute Periods at > 40% to 60% Opacity	Six-Minute Periods at > 60% Opacity	Penalty Amount Per Six-Minute Period
D	The first through tenth six-minute periods in any single day	The first through fourth six-minute periods in any single day	The first six- minute period in any single day	\$ 100
E	The eleventh through eighteenth six-minute periods in any single day	The fifth through ninth six-minute periods in any single day	The second through fourth six-minute periods in any single day	\$ 300
F	The nineteenth and beyond six-minute periods in any single day	The tenth and beyond six- minute periods in any single day	The fifth and beyond six- minute periods in any single day	\$ 500

Part V: Stipulated Penalties Related  
to Section VI of the Consent Decree

69. Stipulated penalties shall be payable to the United States for the following ("Tier I Water Violations"):

a. failure to submit a Quarterly Status Report in accordance with the schedule set forth in paragraph 10, 11, 12, or 13 of Section VI of this Consent Decree;

b. failure to submit a Quarterly Status Report containing, at a minimum, the information set forth in paragraph 9 of Section VI of this Consent Decree; and

c. failure to submit, along with each Quarterly Status Report, the certification required in paragraph 14 of Section VI of this Consent Decree.

70. Stipulated Penalties for Tier I Water Violations shall be assessed as follows:

<u>Period of Noncompliance</u>	<u>Penalty Per Violation Per Day</u>
*	
1st thru 15th day	\$ 100
16th thru 60th day	\$ 200
61st and beyond	\$ 500

71. Stipulated penalties shall be payable to the United States for the following ("Tier II Water Violations"): failure to complete any Compliance Action by the applicable Compliance Deadline set forth in Part I of Section VI of this Consent Decree. For purposes of this paragraph, the term "Compliance Deadline" shall not include the date for achievement of



compliance with interim or final NPDES permit effluent limitations.

72. Stipulated Penalties for Tier II Water Violations shall be assessed as follows:

<u>Period of Noncompliance</u>	<u>Penalty Per Violation Per Day</u>
1st thru 15th day	\$ 300
16th thru 60th day	\$ 600
61st and beyond	\$ 1,000

73. Stipulated penalties shall be payable to the United States for the following ("Type A Water Violations"): failure to comply with any interim limitation as required by paragraphs 3 or 4 of Section VI of this Consent Decree.

74. Stipulated penalties shall be payable to the United States for the following ("Type B Water Violation"): failure to comply with any final effluent limitation contained in PREPA's NPDES permits.

75. Stipulated penalties for Type A and B Water Violations shall be assessed as set forth in the following chart.

Stipulated Penalties for Type A and B Water Violations	
Type A: Interim Effluent Limit Violations	Type B: Final Effluent Limit Violations
<p>Exceedances of any specific interim effluent limits by less than 100%; by fewer than two SU (in the case of pH limits); or by fewer than 9° C (in the case of temperature limits):</p> <ul style="list-style-type: none"> <li>Each exceedance of a specific interim effluent limit: \$250</li> <li>Each exceedance of a monthly average interim effluent limit: \$ 400</li> </ul>	<p>Exceedances of any specific final effluent limits by less than 100%; by fewer than two SU (in the case of pH limits); or by fewer than 9° C (in the case of temperature limits):</p> <ul style="list-style-type: none"> <li>Each exceedance of a specific final effluent limit: \$ 450</li> <li>Each exceedance of a monthly average final effluent limit: \$ 800</li> </ul>

Stipulated Penalties for Type A and B Water Violations	
Type A: Interim Effluent Limit Violations	Type B: Final Effluent Limit Violations
<p>Exceedances of any specific interim effluent limits by 100% or more; by two or more SU (in the case of pH limits); or by 9° C or more (in the case of temperature limits):</p> <ul style="list-style-type: none"> <li>Each exceedance of a daily interim effluent limit: \$ 400</li> <li>Each exceedance of a monthly average interim limit: \$ 600</li> </ul>	<p>Exceedances of any specific final effluent limits by 100% or more; by two or more SU (in the case of pH limits); or by 9° C or more (in the case of temperature limits):</p> <ul style="list-style-type: none"> <li>Each exceedance of a daily final effluent limit: \$ 625</li> <li>Each exceedance of a monthly average final limit: \$ 900</li> </ul>

76. For purposes of determining whether PREPA has committed a Type A or Type B Water Violation as described above in paragraphs 73 through 75 of this Consent Decree, the result(s) of any monitoring performed in accordance with the applicable NPDES permit in effect, as reported on the monthly Discharge Monitoring Report ("DMR") for each Power Plant, shall be used.

Part VI: Stipulated Penalties Related  
to Section VII of the Consent Decree

77. Stipulated penalties shall be payable to the United States for the following ("Tier I SPCC Violations"):

*Reporting (Timeliness)*

a. failure to submit any Spill Maintenance and Construction Program Plan, Spill Maintenance and Construction Program Final Report, or SPCC Coordinator Program Workplan in accordance with the applicable deadline set forth in paragraphs 12, 17, or 19 of Section VII of this Consent Decree;

*Reporting (Substance)*

b. failure to submit an SPCC Plan containing, at a minimum, the information required by paragraph 7 of Section VII of this Consent Decree; and

c. failure to allocate sufficient resources to accomplish the objectives of a full-time SPCC Coordinator at each Facility in accordance with Section VII of this Consent Decree;

78. Stipulated penalties for Tier I SPCC Violations shall be assessed as follows:

<u>Period of Noncompliance</u>	<u>Penalty Per Violation Per Day</u>
1st thru 15th day	\$ 100.00
16th thru 60th day	\$ 200.00
61st day and beyond	\$ 500.00

79. Stipulated penalties shall be payable to the United States for the following ("Tier II SPCC Violations"):

*Reporting (Timeliness of SPCC Plan)*

a. failure to submit any SPCC Plan in accordance with the applicable deadline set forth in paragraphs 2, 3, 4, 5, 6, and 9 of Section VII of this Consent Decree;

*Reporting (Successive Disapprovals)*

b. EPA disapproval, in whole or in part, of an SPCC Plan re-submitted by PREPA pursuant to paragraph 9 of Section VII of this Consent Decree;

c. EPA disapproval, in whole or in part, of an Spill Maintenance and Construction Program Plan re-submitted by PREPA pursuant to paragraph 14 of Section VII of this Consent Decree;  
and

*Implementation (Spill Maintenance and Construction Program)*

d. failure to implement, as required by paragraph 16 of Section VII of this Consent Decree, any measure of an EPA-approved Spill Maintenance and Construction Program that is required by paragraph 12 of Section VII of this Consent Decree;

80. Stipulated penalties for Tier II SPCC Violations shall be assessed as follows:

<u>Period of Noncompliance</u>	<u>Penalty Per Violation Per Day</u>
1st thru 15th day	\$ 300.00
16th thru 60th day	\$ 600.00
61st day and beyond	\$ 1,000.00

81. Stipulated penalties shall be payable to the United States for the following ("Tier III SPCC Violation"):

*Assignment of Coordinator*

a. failure to assign an SPCC Coordinator as required by paragraph 20 of Section VII of this Consent Decree.

82. Stipulated penalties for Tier III SPCC Violations shall be assessed as follows:

<u>Period of Noncompliance</u>	<u>Penalty Per Violation Per Day</u>
1st thru 15th day	\$ 500.00
16th thru 60th day	\$ 1,000.00
61st day and beyond	\$ 1,500.00

Part VII: Stipulated Penalties Related  
to Section VIII of the Consent Decree

83. Stipulated penalties shall be payable to the United States for the following ("Tier I EPCRA Section 312 Violations"):  
*Reporting*

a. failure to submit with emergency and hazardous chemical inventory forms the cover letter required by paragraph 3 of Section VIII of this Consent Decree;

b. failure to send emergency and hazardous chemical inventory forms by certified mail in accordance with paragraphs 4 and 6 of Section VIII of this Consent Decree; and

*Reporting (Timeliness of Future Reporting)*

c. failure to comply with the reporting deadline of Section 312(a)(2) of EPCRA, 42 U.S.C. § 11022(a)(2).

84. Stipulated penalties for Tier I EPCRA Section 312 Violations shall be assessed as follows:

<u>Period of Noncompliance</u>	<u>Penalty Per Violation Per Day</u>
1st thru 15th day	\$ 100.00
16th thru 60th day	\$ 200.00
61st day and beyond	\$ 500.00

85. Stipulated penalties shall be payable to the United States for the following ("Tier II EPCRA Section 312 Violation"):

*Reporting (Substance of Future Reporting)*

a. failure to submit in emergency and hazardous chemical inventory forms the information required by Section 312(d) of EPCRA and the applicable regulations promulgated under Section 312 of EPCRA.

86. Stipulated penalties for Tier II EPCRA Section 312 Violations shall be assessed as follows:

<u>Period of Noncompliance</u>	<u>Penalty Per Violation Per Day</u>
1st thru 15th day	\$ 300.00
16th thru 60th day	\$ 600.00
61st day and beyond	\$ 1,000.00

87. Stipulated penalties shall be payable to the United States for the following ("Tier III EPCRA Section 312 Violation"):

*Reporting (Timeliness of Prior Reporting)*

a. failure to submit, within forty-five (45) days of entry of this Consent Decree as required by paragraph 2 of Section VIII of this Consent Decree, emergency and hazardous chemical inventory forms.



88. Stipulated penalties for Tier III EPCRA Section 312 Violations shall be assessed as follows:

<u>Period of Noncompliance</u>	<u>Penalty Per Violation Per Day</u>
1st thru 15th day	\$ 500.00
16th thru 60th day	\$ 1,000.00
61st day and beyond	\$ 1,500.00

Part VIII: Stipulated Penalties Related  
to Section IX of the Consent Decree

89. Stipulated penalties shall be payable to the United States for the following ("Tier I CERCLA/EPCRA Reporting Violations"):

*Reporting (Timeliness)*

a. failure to submit any IRP Program Plan, IRP Program Training Seminar curriculum, IRP Program Final Report, or IRP Program Training Seminar Final Report in accordance with the applicable deadline set forth in paragraph 4, 5, 12, 16, or 17 of Section IX of this Consent Decree;

*Implementation of IRP Program*

b. failure to implement, as required by paragraph 15 of Section IX of this Consent Decree, any measure of an EPA-approved IRP Program Plan or IRP Program Training Seminar curriculum;

### *Certification*

c. failure to submit certification of the IRP Program Training Seminar Final Report as required by paragraph 16 of Section IX of this Consent Decree; and

d. failure to submit certification of IRP Program Training Seminar attendance as required by paragraph 9 or 10 of Section IX of this Consent Decree;

90. Stipulated penalties for Tier I EPCRA/CERCLA Reporting Violations shall be assessed as follows:

<u>Period of Noncompliance</u>	<u>Penalty Per Violation Per Day</u>
1st thru 15th day	\$ 100.00
16th thru 60th day	\$ 200.00
61st day and beyond	\$ 500.00

91. Stipulated penalties shall be payable to the United States for the following ("Tier II CERCLA/EPCRA Reporting Violation"):

#### *Reporting (Successive Disapprovals)*

a. EPA disapproval, in whole or in part, of an IRP Program Plan or the curriculum for an IRP Program Training Seminar re-submitted by PREPA pursuant to paragraph 13 of Section IX of this Consent Decree.

92. Stipulated penalties for Tier II CERCLA/EPCRA Reporting Violations shall be assessed as follows:

<u>Period of Noncompliance</u>	<u>Penalty Per Violation Per Day</u>
1st thru 15th day	\$ 300.00
16th thru 60th day	\$ 600.00
61st day and beyond	\$ 1,000.00

Part IX: Stipulated Penalties Related  
to Section X of the Consent Decree

93. Stipulated penalties shall be payable to the United States for the following ("Underground Storage Tank Violations"):

- a. failure to submit certification in accordance with paragraph 2 or 3 of Section X of this Consent Decree; and
- b. failure to submit certification in accordance with paragraph 4 of Section X of this Consent Decree.

94. Stipulated penalties for Underground Storage Tank Violations shall be assessed as follows:

<u>Period of Noncompliance</u>	<u>Penalty Per Violation Per Day</u>
1st thru 15th day	\$ 500.00
16th thru 60th day	\$ 1,000.00
61st day and beyond	\$ 1,500.00

XV. DISPUTE RESOLUTION

95. Unless otherwise expressly provided for in this Consent Decree, including any Attachments or Appendices to this Consent

Decree, the dispute resolution procedures of this Section shall be the exclusive mechanism to resolve disputes arising under or with respect to this Consent Decree. However, the procedures set forth in this Section shall not apply to actions by the United States to enforce obligations of PREPA that have not been disputed in accordance with this Section.

96. Any dispute that arises under or with respect to this Consent Decree or any of its Attachments or Appendices shall, in the first instance, be the subject of informal negotiations between the Parties to the dispute. The dispute shall be considered to have arisen when one Party receives from the other Party a written Notice of Dispute. The period for informal negotiations shall conclude upon receipt of written notice from either Party but shall not exceed thirty (30) days from the date of the Notice of Dispute unless such time period is extended by written agreement of the Parties to the dispute.

97. In the event that the Parties cannot resolve a dispute by informal negotiations under the preceding paragraph, then the written position advanced by EPA shall be considered binding unless PREPA invokes the formal dispute resolution procedures of this Section by filing with the Court a petition describing the nature of the dispute, describing the efforts made by the Parties

to resolve the dispute, and proposing a resolution of the dispute, including, but not limited to, the relief requested and any schedule pursuant to which the dispute must be resolved to ensure orderly implementation of the Consent Decree. Any such petition shall be filed within fifteen (15) days from the date of conclusion of the informal negotiation period as set forth in the preceding paragraph. In any such dispute, PREPA shall bear the burden of proof. No inferences or presumptions adverse to either Party will be drawn as a result of the termination of informal negotiations or the invocation of formal dispute resolution procedures. The United States shall have forty-five(45) days to respond to the petition.

98. The invocation of formal dispute resolution procedures under this Section shall not, in itself, extend, postpone, or affect in any way the deadlines for PREPA to meet its obligations under this Consent Decree with respect to the disputed issue.

99. If PREPA does not file a petition with the Court within fifteen (15) days of the conclusion of informal negotiations as set forth in paragraph 97 above, PREPA shall have waived its right to challenge the United States' resolution of the matter.

100. The invocation of formal dispute resolution procedures under this Section shall not extend, postpone, or affect in any

way any obligation of PREPA under this Consent Decree that is not directly in dispute unless EPA agrees or the Court determines otherwise. Stipulated penalties with respect to the disputed matter shall continue to accrue, but payment shall be stayed pending resolution of the dispute. In the event that PREPA does not prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section XIV ("Stipulated Penalties") of this Decree.

XVI. RIGHT OF ENTRY AND ACCESS TO INFORMATION

101. Until termination of this Consent Decree, EPA and its representatives, contractors, and consultants, and attorneys for the United States, upon presentation of credentials verifying their identity, shall have the authority to enter PREPA Facilities, at all reasonable times, for the purposes of:

- a. monitoring the implementation of activities required by this Consent Decree;
- b. verifying any data, records, or other information submitted to EPA in accordance with the terms of this Consent Decree;
- c. obtaining samples and, upon request, split samples taken by PREPA or its consultants; and

d. monitoring PREPA's compliance with the requirements of this Consent Decree.

102. PREPA shall provide to EPA, upon request, copies of all documents and information within PREPA's possession or control or that of its agents or contractors, relating to the implementation of this Consent Decree, including, but not limited to, raw data, test results, memoranda, reports, correspondence, bench notes, any drafts of the foregoing, or other documents or information related to the activities PREPA is required to perform under this Consent Decree. PREPA shall also make available to EPA, for purposes of investigation and information gathering, its employees, agents, or representatives with knowledge of relevant facts concerning the performance of the activities PREPA is required to perform under this Consent Decree.

103. All data, factual information, and documents submitted by PREPA pursuant to this Consent Decree shall be subject to public inspection and release unless identified as confidential by PREPA in full conformance with 40 C.F.R. Part 2, Subpart B. PREPA shall substantiate any such identification in accordance with 40 C.F.R. Part 2, as appropriate. If no claim of confidentiality accompanies data, factual information, or documents when they are submitted to the United States, or if the

United States has notified PREPA that data, factual information, or documents submitted are not confidential under applicable regulatory standards, the public may be given access to such without further notice to PREPA.

104. Nothing in this Consent Decree in any way limits or affects any rights of entry and inspection held by Plaintiff pursuant to applicable federal or Commonwealth laws, regulations, or permits.

105. PREPA may assert that certain documents, records, and other information are subject to the attorney-client privilege or any other privilege recognized by federal law. If PREPA asserts such a privilege in lieu of providing a document, record, or other information, PREPA shall notify the United States that such claim is being made and provide the United States with the following: (1) the title of the document, record, or information; (2) the date of the document, record, or information; (3) the name and title of the author of the document, record, or information; (4) the name and title of each addressee and recipient; (5) a description of the subject of the document, record, or information; and (6) the privilege asserted by PREPA. However, no documents, reports or other information



created or generated pursuant to the requirements of the Consent Decree shall be withheld on the grounds that they are privileged.

XVII. RETENTION OF RECORDS

106. PREPA shall preserve and make available to EPA upon request, for three years after the date of entry of this Consent Decree or for a minimum of three (3) years from the date of creation, whichever is later, an original or copy of all records, logs, and documents (including sampling data and analysis) created or received by PREPA that relate in any way to the requirements of this Consent Decree.

107. Upon retaining any agent, consultant, or contractor for the purpose of carrying out the terms of this Consent Decree, PREPA shall require such agent, consultant, or contractor to provide a copy to PREPA of all documents created in connection with the performance of activities required under this Consent Decree.

108. Nothing in this Consent Decree in any way limits PREPA's obligations under any federal or Commonwealth law, regulation, or permit to preserve for more than the retention period set forth above in paragraph 106 any record, log, or

document (including sampling data and analysis) that relates in any way to the requirements of this Consent Decree.

109. At the conclusion of this document retention period, PREPA shall notify the United States at least ninety (90) days prior to the destruction of any such records or documents and, upon request by the United States, PREPA shall make such records available to EPA for inspection, copying, or retention. To the extent that PREPA asserts that any such records are confidential or are subject to any privilege recognized by federal law, paragraphs 102 and 104 of Section XVI ("Right of Entry and Access to Information") shall apply.

110. PREPA hereby certifies that, to the best of its knowledge and belief, after thorough inquiry, PREPA has not altered, mutilated, discarded, destroyed, or otherwise disposed of any records, documents, or other information relating to its potential liability under this Consent Decree since October 27, 1993, when the United States filed the Complaint in this Action.

XVIII. DUTIES OF COMPLIANCE WITH ENVIRONMENTAL LAWS

111. By its consent to the entry of this Decree, the United States does not warrant or aver in any manner that PREPA's complete compliance with this Consent Decree will result in

compliance with the provisions of the Clean Air Act, the Clean Water Act, PREPA's NPDES permits, RCRA, CERCLA, EPCRA, or any regulations promulgated thereunder. Further, EPA's review and approval of any plan or submission by PREPA under this Consent Decree shall in no way constitute a warranty that implementation by PREPA of such approved plan or submission will result in compliance with the Clean Air Act, the Clean Water Act, PREPA's NPDES permits, RCRA, CERCLA, EPCRA, or any regulations promulgated thereunder.

112. Nothing in this Consent Decree alters PREPA's duties or obligations as imposed by the Clean Air Act, Clean Water Act, RCRA, CERCLA, EPCRA, the regulations promulgated thereunder, or any law or regulation of the Commonwealth of Puerto Rico. Except as expressly provided in Sections V, VI, VII, VIII, IX, and X (Compliance Program Requirements), this Consent Decree shall not be construed as a determination of any issue related to any federal, state, or local permit.

113. This Consent Decree in no way relieves PREPA of its obligation to comply with federal, Commonwealth, or local law or regulation, or with any federally approved permit, variance, or other requirement with which PREPA is otherwise required to

comply in the absence of this Consent Decree, including but not limited to the SIP and PREPA's NPDES permits.

114. This Consent Decree shall not relieve PREPA of its obligation to obtain any permit, variance, or other approval it is otherwise required to secure in the absence of this Consent Decree, including, but not limited to, PREPA's NPDES permits. Nothing in this Consent Decree shall be construed as precluding PREPA from securing any permit, variance, or other approval pursuant to applicable laws and regulations.

115. The pendency or outcome of any proceeding concerning the issuance, re-issuance, or modification of any permit, variance, or plan related to the Clean Air Act, the Clean Water Act, RCRA, CERCLA, or EPCRA, including, but not limited to, the SIP or any NPDES permit, shall neither affect nor postpone PREPA's duties, obligations, or liabilities under this Consent Decree.

116. The development and/or implementation of any Compliance Program in accordance with this Consent Decree shall not be deemed a defense to liability for any violation of the Consent Decree or a defense to any applicable federal, Commonwealth, or local law or regulation.

XIX. NON-WAIVER PROVISIONS

117. This Consent Decree does not limit or affect the rights of PREPA or of the United States as against any third parties.

118. The United States reserves any and all legal and equitable remedies available to enforce the provisions of this Decree. PREPA reserves any and all legal and equitable rights, remedies, and defenses that it may have in connection with any such enforcement procedure or proceeding, except as otherwise set forth in this Consent Decree.

119. The United States expressly reserves the right to pursue all actions and remedies available to it for violations of the Clean Air Act, Clean Water Act, RCRA, CERCLA, or EPCRA not specifically pleaded in the Complaint filed in this matter.

120. This Consent Decree does not resolve or affect any criminal liability of PREPA, including its officers or employees. The United States further reserves the right to pursue liability and remedies available to it for any criminal liability of PREPA, including its officer or employees.

121. Nothing herein shall be construed to limit the authority of the United States to commence any action against any person, including PREPA, in response to conditions which may

present an imminent and substantial endangerment to the health of persons, the public health or welfare, or to the environment.

122. Nothing herein shall be construed to preclude PREPA from availing itself of the EPA's policy on "Incentives for Self-Policing: Discovery, Disclosure, Correction, and Prevention of Violations," issued on December 22, 1995 (60 Fed. Reg. 66706), with respect to any environmental violation, unrelated to this Consent Decree, that PREPA may identify in the future.

#### XX. FORCE MAJEURE

123. PREPA's obligation to comply with one or more of the provisions of this Consent Decree shall be deferred to the extent that the delay in compliance is caused by a "force majeure" event. "Force majeure," for purposes of this Consent Decree, is defined as any event arising from causes beyond the control of PREPA, of any entity controlled by PREPA, or of PREPA's contractors, that delays or prevents the performance of any obligation under this Consent Decree despite PREPA's best efforts to fulfill the obligation. The requirement that PREPA exercise "best efforts to fulfill the obligation" includes using best efforts to anticipate any potential force majeure and best efforts to address the effects of any potential force majeure

(1) as it is occurring; and (2) following the potential force majeure, such that the delay is minimized to the greatest extent possible. "Force majeure" shall not include any delay due to unanticipated or increased costs of achieving and maintaining compliance with any provision of this Consent Decree or PREPA's financial inability to implement any provision of this Consent Decree. PREPA's failure to obtain any necessary permit or approval shall not be deemed a force majeure unless PREPA demonstrates that it exercised due diligence in promptly pursuing such permit application or approval.

124. If any event occurs or has occurred that may delay the performance of any obligation under this Consent Decree, whether or not caused by a force majeure, PREPA shall notify EPA orally, by the next working day after PREPA first knew or should have known that the event might cause a delay. Within ten (10) days thereafter, PREPA shall provide in writing to EPA an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; PREPA's rationale for attributing such delay to a force majeure if PREPA intends to assert such a claim; and a

statement as to whether, in the opinion of PREPA, such event may cause or contribute to an endangerment to public health, welfare or the environment. PREPA shall include with any notice all available documentation supporting its claim that the delay was attributable to a force majeure. Failure to comply with the above procedures regarding notification and reporting shall preclude PREPA from asserting any claim of force majeure for that event for the period of time of such failure to comply, and for any additional delay caused by such failure. PREPA shall be deemed to know of any circumstance of which PREPA's contractors knew or should have known.

125. If EPA agrees that the delay or anticipated delay is attributable to a force majeure, the time for implementation of the applicable portions of this Consent Decree that are affected by the force majeure will be extended by EPA for such time as is necessary to implement them. An extension of the time for performance of the obligations affected by the force majeure shall not, of itself, extend the time for performance of any other obligation. If EPA does not agree that the delay or anticipated delay has been or will be caused by a force majeure, EPA will notify PREPA in writing of its decision. If EPA agrees that the delay is attributable to a force majeure, EPA will



notify PREPA in writing of the length of the extension, if any, for performance of the obligations affected by the force majeure.

126. If PREPA elects to invoke the dispute resolution procedures set forth in Section XV ("Dispute Resolution"), it shall do so no later than thirty (30) days after receipt of EPA's notice. In any such proceeding, PREPA shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a force majeure, that the duration of the delay or the extension sought was or will be warranted under the circumstances, that best efforts were exercised to avoid and mitigate the effects of the delay, and that PREPA complied with the requirements of this Section of the Decree. If PREPA carries this burden, the delay at issue shall be deemed not to be a violation by PREPA of the affected obligation of this Consent Decree identified to EPA and to the Court.

#### XXI. COSTS OF SUIT

127. Each Party shall bear its own costs and attorney's fees in this action.

XXII. FORM OF NOTICE

128. Unless otherwise specified herein, PREPA's notifications to or communications with the United States shall be deemed submitted on the date they are postmarked and sent by certified mail, return receipt requested. Otherwise such notifications and communications will be deemed submitted on the day they are received by EPA or the United States.

129. Except as specified otherwise herein, all written notifications or communications between the Parties relating to this Decree shall be addressed as follows:

As to the United States:

Chief, Environmental Enforcement Section  
Environment and Natural Resources Division  
U.S. Department of Justice  
Post Office Box 7611  
Ben Franklin Station  
Washington, D.C. 20044  
Reference DOJ Case No. 90-5-2-1-1750

U.S. Environmental Protection Agency  
Region II, Caribbean Environmental Protection Division  
Centro Europa Building  
1492 Ponce de Leon Avenue  
Suite 417  
Santurce, Puerto Rico 00907

U.S. Environmental Protection Agency  
Regional Counsel, Region II  
Office of Regional Counsel  
290 Broadway  
New York, NY 10007-1866

Regarding Clean Air Act provisions only:

U.S. Environmental Protection Agency  
Air Compliance Branch  
Division of Enforcement and Compliance Assistance  
290 Broadway  
New York, NY 10007-1866

Regarding SPCC/Oil Pollution Prevention provisions  
only:

U.S. Environmental Protection Agency  
Response & Prevention Branch  
Emergency Response & Remedial Division  
2890 Woodbridge Avenue  
Edison, NJ 08837

Regarding NPDES/CWA provisions only:

U.S. Environmental Protection Agency  
Water Compliance Branch  
Division of Enforcement and Compliance Assistance  
290 Broadway  
New York, NY 10007-1866

Regarding UST provisions only:

U.S. Environmental Protection Agency  
Groundwater Compliance Section  
Division of Enforcement and Compliance Assurance  
290 Broadway  
New York, NY 10007-1866

Regarding CERCLA/EPCRA provisions only:

U.S. Environmental Protection Agency  
Response and Prevention Branch  
Emergency and Remedial Response Division  
2890 Woodbridge Avenue  
Edison, New Jersey 08837

As to PREPA:

Miguel A. Cordero-Lopez  
Executive Director  
Puerto Rico Electric Power Authority  
G.P.O. Box 4267  
San Juan, Puerto Rico 00936

Elí Matos-Alicea  
Head, Environmental Law Division  
Puerto Rico Electric Power Authority  
P.O. Box 363928  
San Juan, Puerto Rico 00936-3928

Jorge Seguro  
Goldman Antonetti & Cordova  
Post Office Box 70364  
San Juan, Puerto Rico 00936-8364

#### XXIII. MODIFICATION

130. Except as provided for herein, there shall be no modification of this Consent Decree without the written agreement of both Parties to this Consent Decree (or their successors or assigns) and approval of the Court.

131. Notwithstanding the preceding paragraph, except as otherwise expressly provided in this Consent Decree, EPA and

PREPA may, by written agreement, without the approval of the Court, modify the proposals, workplans, or statements of work submitted pursuant to the Decree and its attachments.

#### XXIV. PUBLIC COMMENT

132. The parties agree and acknowledge that final approval by the United States and entry of this Decree is subject to the requirements of 28 C.F.R. Section 50.7 which provides for, inter alia, notice of the lodging of this Consent Decree in the Federal Register, an opportunity for public comment, and consideration by the United States of any comments. The United States reserves the right to withdraw or withhold its consent if the comments regarding the Consent Decree disclose facts or considerations that indicate that the Consent Decree is inappropriate, improper, or inadequate. After reviewing the public comments, if any, the United States will advise the Court, by motion, whether the United States seeks entry of this Consent Decree. The Defendant agrees to the entry of this Consent Decree without further notice.

XXV. CONTINUING JURISDICTION OF THE COURT

133. This Court retains jurisdiction over both the subject matter of this Consent Decree and PREPA until termination of this Consent Decree for the purpose of enabling any of the Parties to apply to the Court at any time for such further order, direction, and relief as may be necessary or appropriate for the construction or modification of this Consent Decree, or to effectuate or enforce compliance with its terms, or to resolve disputes in accordance with Section XV ("Dispute Resolution") hereof this Consent Decree.

XXVI. EFFECTIVE DATE

134. The effective date of this Consent Decree shall be the date upon which it is entered by the Court.

XXVII. TERMINATION

135. This Consent Decree shall terminate upon this Court's grant of a motion by the United States or a joint motion by the United States and PREPA to the Court only after all of the following have occurred:

a. PREPA has complied with the terms and conditions of this Consent Decree that are applicable to the Compliance Programs for three years;

b. PREPA has satisfied the requirements of this Consent Decree regarding full payment of the civil penalty due to the United States;


c. PREPA has satisfied the requirements of this Consent Decree regarding the implementation of Additional Environmental Projects;

d. PREPA has paid all stipulated penalties due under this Consent Decree and no stipulated penalty amounts are outstanding, owed to the United States, or disputed.

Upon such motion, the Court may order termination after conducting such inquiry as it deems appropriate.

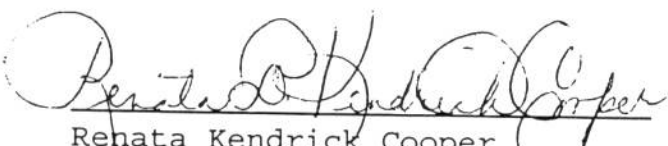
136. Notwithstanding paragraph 135 of this Section, the Parties may, at any time, agree that certain provisions of this Consent Decree should no longer be in effect. If the Parties so agree, the Parties shall file jointly with the Court a "Stipulation of Partial Termination" based on their representation that requirements specified in the Stipulation have been satisfied. In the event that a "Stipulation of Partial Termination" is filed, no action by the Court will be required.

FOR PLAINTIFF, THE UNITED STATES OF AMERICA

  
\_\_\_\_\_  
Lois J. Schiffer  
Assistant Attorney General  
Environment & Natural Resources  
Division

Dated: Feb. 6, 1998

U.S. Department of Justice  
Tenth and Pennsylvania Avenue, N.W.  
Washington, D.C. 20530

  
\_\_\_\_\_  
Renata Kendrick Cooper  
Trial Attorney  
U.S. Department of Justice  
Environment & Natural Resources Division  
Environmental Enforcement Section  
1425 New York Avenue, N.W.  
Washington, D.C. 20005

Dated: February 1998

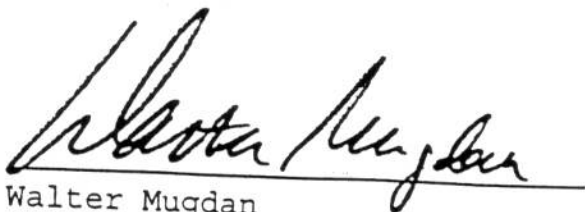


Guillermo Gil  
United States Attorney  
District of Puerto Rico

By: Isabel Muñoz Arosb

Isabel Muñoz #128302  
Assistant United States Attorney  
Federico Degeteau Federal Building  
Carlos Chardon Avenue  
Hato Rey, Puerto Rico 00918

Dated: Feb 10, 1998



Walter Mugdan

Regional Counsel

U.S. Environmental Protection Agency, Region II

Office of Regional Counsel

290 Broadway

New York, NY 10007-1866

Dated: Jan. 29, 1998



Andrew L. Praschak

Associate Regional Counsel for Caribbean Programs

U.S. Environmental Protection Agency, Region II

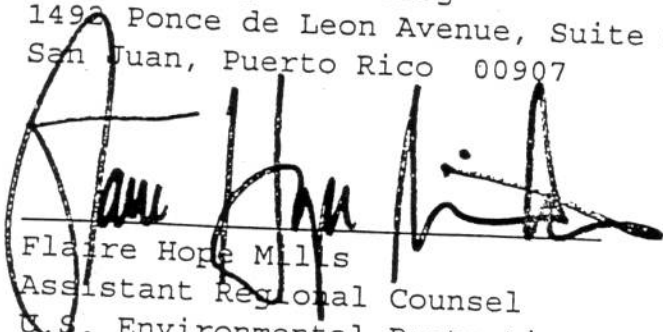
Office of Regional Counsel

Centro Europa Building

1492 Ponce de Leon Avenue, Suite 417

San Juan, Puerto Rico 00907

Dated: Feb. 3, 1998



Flaire Hope Mills

Assistant Regional Counsel

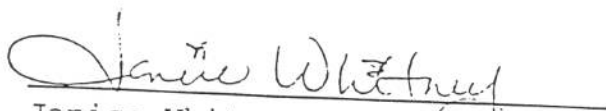
U.S. Environmental Protection Agency, Region II

Office of Regional Counsel

290 Broadway

New York, NY 10007-1866

Dated: Jan. 29, 1998



Janice Whitney

Assistant Regional Counsel

U.S. Environmental Protection Agency, Region II

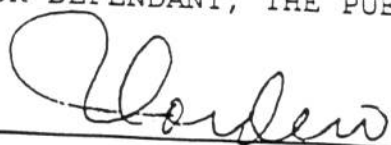
Office of Regional Counsel

290 Broadway

New York, NY 10007-1866

Dated: Jan 29, 1998

FOR DEFENDANT, THE PUERTO RICO ELECTRIC POWER AUTHORITY



Miguel A. Cordero-Lopez  
Executive Director  
Puerto Rico Electric Power Authority  
G.P.O. Box 4267  
San Juan, Puerto Rico 00936

Dated: 02/04/98



Jorge Seguro, Esq.  
Goldman Antonetti & Cordova  
Post Office Box 70364  
San Juan, Puerto Rico 00936-8364

Dated: Feb 6 98

So entered in accordance with the foregoing this \_\_\_\_\_ day of \_\_\_\_\_, 199\_\_.



## AIR COMPLIANCE ATTACHMENT

### A. INTRODUCTORY STATEMENT

1. This Air Compliance Attachment identifies activities that PREPA is required by Section V of the Consent Decree to perform for the purpose of achieving and maintaining compliance with Rule 403 of the PRRCAP at each of PREPA's Power Plants. In addition, implementation of PREPA's Operations and Preventive Maintenance and Balanced Draft Conversion Programs will include activities to assure compliance with Rule 404 of the PRRCAP at each of PREPA's Power Plants.

2. PREPA shall furnish sufficient resources to ensure compliance with the requirements of Section V of the Consent Decree and the Air Compliance Attachment.

3. As in Section V of the Consent Decree, the requirements of the Air Compliance Attachment apply to each Power Plant owned and operated by PREPA at San Juan, Palo Seco, Aguirre, and South Coast. The specific units covered by the Air Compliance Attachment are San Juan Units 5, 6, 7, 8, 9, and 10; Palo Seco Units 1, 2, 3, and 4; Aguirre Units 1 and 2; and South Coast Units 1, 2, 3, 4, 5, and 6 (the "Generating Units"). In the event that PREPA dismantles any Generating Unit and such Unit is no longer in existence, PREPA shall provide documentation thereof to EPA; thereafter, the requirements of Section V of the Consent Decree and the Air Compliance Attachment shall no longer apply to such Unit except that PREPA shall maintain, consistent with Section XVII ("Retention of Records") of this Consent Decree, all records previously created by PREPA during implementation of any Air Compliance Program set forth herein with respect to such Unit.

4. PREPA has represented to EPA that it has developed and implemented the Inspection and Analysis Program and the Hardware Upgrade Program in accordance with the terms provided in Section V of the Consent Decree and the Air Compliance Attachment, including the dates set forth in the Table at paragraph B.2 of the Air Compliance Attachment. The Consent Decree requires that Inspection and Analysis Program and Hardware Upgrade Program activities shall be implemented on or before the date of entry of the Decree, with required Summary Reports submitted in accordance with the requirements of the Air Compliance Attachment.

5. PREPA has represented to EPA that, prior to the date of entry of the Consent Decree, it has established Optimal Operating Ranges for each Generating Unit, in accordance with the terms provided in Section V of the Consent Decree and the Air Compliance Attachment, at a time shortly after water-washing was conducted at each such Generating Unit. Thereafter, PREPA shall revise such Optimal Operating Ranges in accordance with paragraph B.5.e of the Air Compliance Attachment. Adjustments and modifications of such Optimal Operating Ranges shall be made, respectively, pursuant to paragraphs B.5.p and B.5.t of the Air Compliance Attachment. PREPA shall maintain Optimal Operating Ranges in accordance with paragraph B.5 of the Air Compliance Attachment. Verification of Optimal Operating Ranges, and any modification of Optimal Operating Ranges, shall be conducted in accordance with the requirements and schedules set forth in the Optimization Program of Section V of the Consent Decree and the Air Compliance Attachment at paragraph B.5.

6. PREPA has represented to EPA that, on or before the date of entry of the Consent Decree, it has begun development and implementation of the Continuous Monitoring, Fuel Quality, Spare Parts Inventory, and Operations and Preventive Maintenance Programs in accordance with the terms provided in Section V of the Consent Decree and the Air Compliance Attachment.

7. In addition to the Programs identified above in paragraph A.4, A.5, and A.6, PREPA has represented that it has begun to implement the Economizer Sootblower Installation Program and the Independent Auditor Program in accordance with the terms provided in Section V of the Consent Decree and the Air Compliance Attachment.

B. PROGRAMS TO ASSURE ACHIEVEMENT AND MAINTENANCE OF AIR COMPLIANCE

1. The Programs to Assure Achievement and Maintenance of Air Compliance ("Air Compliance Programs") shall achieve the following objectives:

- a. refurbishment of PREPA's Generating Units and operation and maintenance of each Generating Unit

in accordance with the Programs to Assure Achievement and Maintenance of Air Compliance ("Air Compliance Programs"), along with implementation of any additional measures necessary, in order to continually comply with Rules 403 and 404 of the PRRCAP; and

- b. operation of each Generating Unit in a manner consistent with recognized electrical generating industry practices and standards that include manufacturer's recommendations and standard engineering procedures.

2. The following is a list of the Air Compliance Programs:

- a. Inspection and Analysis Program;
- b. Hardware Upgrade Program;
- c. Optimization Program;
- d. Continuous Monitoring Program;
- e. Fuel Quality Program;
- f. Spare Parts Inventory Program;
- g. Operations and Preventive Maintenance Program;
- h. Economizer Sootblower Installation Program;
- i. Balanced Draft Conversion Program; and
- j. Opacity Monitor Installation Program.

The specifications for the Air Compliance Programs are set forth in Section V of the Consent Decree and the Air Compliance Attachment in paragraphs B.3-12 below.

PREPA has represented that the Inspection and Analysis Program and the Hardware Upgrade Program have been developed and implemented in accordance with the following schedule:

COMPLETION DATES OF THE INSPECTION AND ANALYSIS  
AND HARDWARE UPGRADE PROGRAMS

SAN JUAN STEAM PLANT	
Generating Units	Completion Dates
5	March 13, 1996
6	January 28, 1996
7	November 23, 1995
8	May 18, 1996
9	March 13, 1996
10	April 16, 1995

PALO SECO STEAM PLANT	
Generating Units	Completion Dates
1	March 6, 1995
2	September 1, 1995
3	October 14, 1995
4	August 25, 1995

AGUIRRE STEAM PLANT	
Generating Units	Completion Dates
1	June 19, 1995
2	July 8, 1995



SOUTH COAST STEAM PLANT	
Generating Units	Completion Dates
1	May 1, 1996
2	January 20, 1996
3	April 30, 1995
4	August 6, 1995
5	May 23, 1995
6	May 30, 1995

3. Inspection and Analysis Program

a. PREPA shall:

- (1) inspect each Generating Unit to determine its ability to comply with Rule 403 of the PRRCAP;
- (2) conduct inspections during operation and during at least one outage;
- (3) use standard test methods or derivatives consistent with standard test methods, if available, or use manufacturer's recommendations, if provided by the manufacturer, where testing of components or emissions is necessary;
- (4) organize, compile, retain, and make available to EPA, upon request, documentation generated during the development and implementation of the Inspection and Analysis Program. This documentation shall include the following types of information, where available:
  - (a) instrumentation monitoring data and analysis;

- (b) observation checklists;
  - (c) logs of or notes on inspection activities; and
  - (d) contractor reports and/or recommendations where such reports and/or recommendations were made;
- (5) determine the installation, repair, and/or replacement activities that shall be undertaken, based upon the analysis of the inspection activities and of the documentation organized, compiled, and retained;
- (6) for each Generating Unit, inspect and/or analyze, at a minimum, each hardware component listed below (where the Generating Unit inspected is equipped with such hardware):
- (a) fuel oil hardware
    - i) fuel oil pumps;
    - ii) fuel oil heaters;
    - iii) viscometer;
    - iv) burners; and
    - v) trifecta Valves;
  - (b) combustion control hardware
  - (c) combustion air system hardware
    - i) windbox, diffusers/swirlers, air slides, registers, dampers, duct and furnace casing integrity, and tilting mechanisms;
    - ii) air heater;
    - iii) fans (induced draft, forced draft, recirculation scanner, and ignitor); and
    - iv) steam coils;

- (d) flue gas handling system hardware
    - i) ductwork; and
    - ii) sootblowers;
  - (e) steam cycle system hardware
    - i) pressure components;
    - ii) feedwater heaters; and
    - iii) internal boiler surfaces; and
  - (f) monitors.
- b. On or before date of entry of the Consent Decree, PREPA shall complete the inspection and analysis of each Generating Unit as required by the Inspection and Analysis Program of Section V of the Consent Decree.
- c. Preparation of Inspection and Analysis Program Summary Reports
- (1) Within sixty (60) days of the date of entry of the Consent Decree, for each Generating Unit, PREPA shall prepare an Inspection and Analysis Program Summary Report that shall include the following, where available:
    - (a) a description of any deficiency discovered during the Inspection and Analysis Program; and
    - (b) a synopsis of the steps necessary to correct such deficiency.
  - (2) The Inspection and Analysis Program Summary Report shall be prepared by each of PREPA's Plant Managers.
  - (3) The Inspection and Analysis Program Summary Report shall be certified by each of PREPA's Plant Managers in accordance with paragraph G.1 of Section V of the Consent Decree.

(4) PREPA may consolidate the Inspection and Analysis Program Summary Report for each Generating Unit with the Hardware Upgrade Summary Report for each Generating Unit provided that the requirements set forth above for the Inspection and Analysis Summary Report are satisfied.

d. Certification of Program Completion and Submission of Inspection and Analysis Program Summary Report

Within sixty (60) days of the date of entry of the Consent Decree, PREPA shall submit to EPA:

- (1) certification by PREPA's Electrical System Director stating that "to the best of my knowledge and belief, the Inspection and Analysis Program has been completed in accordance with Section V of the Consent Decree";
- (2) the Inspection and Analysis Program Summary Report, previously prepared and certified pursuant to paragraph B.3.c above; and
- (3) certification of the Inspection and Analysis Program Summary Report, by PREPA's Electrical System Director in accordance with paragraph G.2 of Section V of the Consent Decree.

4. Hardware Upgrade Program

- a. On or before the date of entry of the Consent Decree, based on the results of activities conducted pursuant to the Inspection and Analysis Program, PREPA shall install, repair, and/or replace all hardware components determined to be deficient or schedule such installation, repair, and/or replacement to occur, as soon as possible, during implementation of the Operations and Preventive Maintenance Program.

- b. For each Generating Unit, PREPA shall organize, compile, retain, and make available to EPA upon request a record, where available, of all installations, repairs and/or replacements conducted pursuant to the Hardware Upgrade Program.
- c. On or before the date of entry of the Consent Decree, PREPA shall complete all requirements of the Hardware Upgrade Program for each Generating Unit.
- d. Preparation of Hardware Upgrade Program Summary Reports
  - (1) Within sixty (60) days of the date of entry of the Consent Decree, for each Generating Unit, PREPA shall prepare a Hardware Upgrade Program Summary Report that shall include, at a minimum, the following:
    - (a) a list of each hardware component installed, repaired, and/or replaced during the Hardware Upgrade Program; and
    - (b) a list of all hardware components determined to be deficient during the Inspection and Analysis Program that were not installed, repaired, and/or replaced, and the reason therefor.
  - (2) The Hardware Upgrade Program Summary Report shall be prepared by each of PREPA's Plant Managers.
  - (3) The Hardware Upgrade Program Summary Report shall be certified by each of PREPA's Plant Managers in accordance with paragraph G.1 of Section V of the Consent Decree.
  - (4) PREPA may consolidate the Hardware Upgrade Program Summary Report for each Generating Unit with the Inspection and Analysis Program Summary Report for each Generating Unit

provided that the requirements set forth above for the Hardware Upgrade Summary Report are satisfied.

- e. Certification of Program Completion and Submission of Hardware Upgrade Program Summary Report

Within sixty (60) days of the date of entry of the Consent Decree, for each Generating Unit, PREPA shall submit to EPA:

- (1) certification by PREPA's Electrical System Director stating that "to the best of my knowledge and belief, the Hardware Upgrade Program has been completed in accordance with the requirements of Section V of the Consent Decree";
- (2) the Hardware Upgrade Summary Program Report, previously prepared and certified pursuant to paragraph B.4.d above; and
- (3) certification of the Hardware Upgrade Program Summary Report by PREPA's Electrical System Director in accordance with paragraph G.2 of Section V of the Consent Decree.

5. Optimization Program

- a. For each Generating Unit, PREPA shall establish, pursuant to "PREPA's Procedures for Establishment of Optimal Operating Ranges," Optimal Operating Ranges necessary to assure the compliance of each Generating Unit with Rule 403 of the PRRCAP. The Optimal Operating Ranges shall be established at fixed (50%, 75%, and 100% loads), frequency control, and sootblowing modes for the following parameters:

- (1) minimum and maximum percent oxygen levels;
- (2) average cold end air heater temperatures, minimum degrees Fahrenheit (except with

respect to the following Generating Units:  
San Juan 5 and 6, and South Coast 1 and 2);

- (3) atomizing steam-to-oil pressure differential, minimum psid;
  - (4) sootblower header steam pressure, minimum psig (during sootblowing only); and
  - (5) fuel viscosity at burner header, maximum ssu.
- b. PREPA's Procedures for Establishment of Optimal Operating Ranges are set forth in Appendix A of the Air Compliance Attachment to this Consent Decree.
- c. PREPA's Procedures for Establishment of Optimal Operating Ranges shall be in accordance with manufacturer's recommendations for each Generating Unit, if provided, and current industry standards for such equipment.
- d. On or before the date of entry of the Consent Decree, for each Generating Unit, PREPA shall establish Optimal Operating Ranges, in accordance with paragraph B.5.a above, at a time shortly after water-washing has been conducted at each Generating Unit.
- e. Revision of Optimal Operating Ranges
- (1) For each Generating Unit, PREPA shall revise, during a period when sulfur oxide forming deposits and/or catalysts are representative of average operating conditions ("Average Operating Condition Period") for such Generating Unit, the Optimal Operating Ranges that were established pursuant to paragraph B.5.d above;
  - (2) PREPA shall establish the revised Optimal Operating Ranges required by paragraph

B.5.e(1) above during the first Average Operating Condition Period for each Generating Unit that begins on or after November 1, 1996; if the Average Operating Condition Period for a Generating Unit exists at the time of verification of Optimal Operating Ranges pursuant to paragraph B.5.p below, then revision of Optimal Operating Ranges, as required by paragraph B.5.e(1) above, may be performed during verification of Optimal Operating Ranges;

- (3) PREPA shall maintain the revised Optimal Operating Ranges established in accordance with paragraphs B.5.e(1) and B.5.e(2) in accordance with paragraph B.5.h below.

f. Submission of Revised Optimal Operating Ranges

Within thirty (30) days of establishment of the revised Optimal Operating Ranges or within thirty (30) days of entry of the Consent Decree, whichever is later, PREPA shall submit to EPA the revised Optimal Operating Ranges established pursuant to paragraphs B.5.e(1) and B.5.e(2) above. Such submission shall include for each Generating Unit, at a minimum, the following:

- (1) the Optimal Operating Ranges established for such Generating Unit pursuant to paragraphs B.5.e(1) and B.5.e(2) above;
- (2) the supporting data that was used to determine both the Average Operating Condition Period and the revised Optimal Operating Ranges for such Generating Unit;
- (3) a revised list of Optimal Operating Ranges that includes any new Optimal Operating Range; and
- (4) certification of the Optimal Operating Ranges, established in accordance with paragraphs



B.5.e(1) and B.5.e(2), by the Plant Manager and the Head of PREPA's Environmental Protection and Quality Assurance Division in accordance with paragraph G.3 of Section V of the Consent Decree.

- g. Operation within any range established pursuant to the Optimization Program shall not excuse violations of Rule 403 of the PRRCAP. Where operation of a Generating Unit within a range required by the Optimization Program causes a violation of Rule 403 of the PRRCAP, PREPA shall modify such range in accordance with paragraph B.5.t below.
- h. On or before the date of entry of the Consent Decree, and thereafter until termination of Section V of the Consent Decree, PREPA shall implement and maintain the then current established Optimal Operating Ranges and shall not operate any Generating Unit outside of Optimal Operating Ranges established for any parameter set forth above in paragraph B.5.a. The requirements of this paragraph shall not apply during the following periods:
  - (1) startup or shut-down (loads below 50%) periods for which operating ranges do not apply;
  - (2) malfunction periods for which paragraphs B.5.i through B.5.o below apply; or
  - (3) during any period, as necessary but not to exceed fifteen (15) minutes, in which PREPA is taking a burner elevation in or out of service in conformance with PREPA's Operations and Preventive Maintenance Programs or for routine load management purposes.
- i. For any period of malfunction, as defined by Section I of the Consent Decree, within twenty-four (24) hours from the onset of the malfunction period, PREPA shall assess whether operation of an affected Generating Unit within the previously

established Optimal Operating Ranges is appropriate for the period of malfunction.

- j. If PREPA determines that operation within the previously established Optimal Operating Ranges is inappropriate, no later than 120 hours from the onset of the malfunction period, PREPA shall modify the previously established Optimal Operating Ranges, using PREPA's Procedures for Establishment of Optimal Operating Ranges, or abbreviated procedures that are consistent with PREPA's Procedure's for Establishment of Optimal Operating Ranges.
- k. PREPA shall implement and maintain any Optimal Operating Range modified pursuant to paragraph B.5.j above for the duration of the period of malfunction.
- l. If PREPA modifies an Optimal Operating Range in accordance with paragraph B.5.j above or paragraph B.5.o below, PREPA shall notify EPA of such modification in accordance with paragraph B.5.t below.
- m. Upon correction of a malfunction, where the correction involved substantial changes to the Generating Unit, PREPA shall assess whether operating the affected Generating Unit within the Optimal Operating Ranges maintained prior to the malfunction will achieve optimal combustion and boiler efficiency while maintaining compliance with Rule 403 of the PRRCAP.
- n. If, pursuant to paragraph B.5.m above, PREPA determines that the Optimal Operating Ranges maintained prior to the malfunction are appropriate, PREPA shall operate the Generating Unit in accordance with such Ranges, within twenty four (24) hours of correction of the malfunction.
- o. If, pursuant to paragraph B.5.m above, PREPA determines that the Optimal Operating Ranges

maintained prior to the malfunction are inappropriate, within ten (10) days of correction of the malfunction, PREPA shall modify the Optimal Operating Ranges using its Procedures for Establishment of Optimal Operating Ranges, or abbreviated procedures consistent with PREPA's Procedures for the Establishment of Optimal Operating Ranges and shall notify EPA of such modification in accordance with paragraph B.5.u.

p. Verification of Optimal Operating Ranges

On or before December 31, 1997, for each Generating Unit except Palo Seco Generating Unit No. 3, PREPA shall verify each Optimal Operating Range established pursuant to paragraph B.5.d above. With respect to Palo Seco Generating Unit No. 3, PREPA shall verify each Optimal Operating Range established pursuant to paragraph B.5.d. above on or before March 31, 1998.

q. Tests to verify Optimal Operating Ranges shall include, but need not be limited to, demonstration of compliance of a Generating Unit with applicable regulatory air pollution control requirements addressing opacity (as measured in-stack) and visible emissions.

Additionally, analysis of effluent gas may be made at the economizer for oxygen ( $O_2$ ), carbon monoxide (CO), and carbon dioxide ( $CO_2$ ), along with analysis at the stack of oxygen ( $O_2$ ), sulfur dioxide ( $SO_2$ ), and particulate matter using Continuous Emissions Monitoring (where applicable). Proper Quality Control and Quality Assurance procedures shall be implemented during the testing to ensure the accuracy and precision of the testing and subsequent results. Such tests shall be performed at full, medium, and low steady state loads along with regulating frequency and sootblowing modes.

r. Where Optimization Verification Tests confirm an established Optimal Operating Range, PREPA shall

maintain such confirmed Optimal Operating Range and shall monitor maintenance of such range in accordance with the provisions of the Continuous Monitoring Program.

s. Where Optimization Verification Tests invalidate any established Optimal Operating Range, PREPA shall:

- (1) as soon as possible, but no later than ten (10) working days after PREPA's receipt of Optimization Verification Test results that invalidate an established Optimal Operating Range, adjust the Optimal Operating Range in a manner not inconsistent with PREPA's Procedures for Establishment of Optimal Operating Ranges; and
- (2) prepare and submit to EPA a Notification of Modification of an Optimal Operating Range in accordance with paragraph B.5.u below.

t. Modification of An Optimal Operating Range

- (1) If, at any time prior to the termination of Section V of the Consent Decree, PREPA determines that modifying a then current Optimal Operating Range is necessary to ensure that a Generating Unit maintains compliance with Rule 403 of the PRRCAP, PREPA shall:
  - (a) modify the Optimal Operating Range using PREPA's Procedures for Establishment of Optimal Operating Ranges, or abbreviated procedures consistent with PREPA's Procedures for the Establishment of Optimal Operating Ranges; and
  - (b) conduct Verification Testing of a modified Optimal Operating Range if PREPA determines that its modification

of the Optimal Operating Range was substantial enough to require such testing.

- (2) If, at any time prior to the termination of Section V of the Consent Decree, PREPA determines that modifying a then current Optimal Operating Range will allow a Generating Unit to achieve greater combustion and boiler efficiency, PREPA may:

- (a) modify the Optimal Operating Range using PREPA's Procedures for Establishment of Optimal Operating Ranges, or abbreviated procedures consistent with PREPA's Procedures for the Establishment of Optimal Operating Ranges; and
- (b) conduct Verification Testing of a modified Optimal Operating Range if PREPA determines that its modification of the Optimal Operating Range was substantial enough to require such testing.

u. Notification of Modification of An Optimal Operating Range ("Notification of Modification")

(1) Preparation

Within five (5) working days of any adjustment and/or modification of an Optimal Operating Range in accordance with paragraphs B.5.p or B.5.t above, the Plant Manager responsible for the Generating Unit subject to such modification and the Head of PREPA's Environmental Protection and Quality Assurance Division shall prepare a Notification of Modification that shall include the following:

- (a) identification of the new Optimal Operating Range and the Optimal Operating Range previously established;
- (b) if applicable, documentation demonstrating that the new Optimal Operating Range will achieve greater combustion and boiler efficiency than the range previously established and/or verified (including tests results, analysis of such results, any data relied upon for the modification determination, test protocols, and QA/QC methods used);
- (c) documentation demonstrating that the new Optimal Operating Range will result in compliance with Rule 403 of the PRRCAP;
- (d) results of tests conducted pursuant to PREPA's Procedures for Establishment of Optimal Operating Ranges or conducted pursuant to abbreviated procedures consistent with PREPA's Procedures for the Establishment of Optimal Operating Ranges, analysis of such results and any other data and test protocols (including any applicable QA/QC methods) relied upon for the modification determination;
- (e) a revised list of Optimal Operating Ranges that includes any new Optimal Operating Range; and
- (f) certification of the Notification of Modification by the Plant Manager and the Head of PREPA's Environmental Protection and Quality Assurance Division in accordance with paragraph G.3 of Section V of the Consent Decree.

(2) Submission

Within five (5) working days of preparation of a Notification of Modification, PREPA shall submit to EPA the Notification of Modification prepared pursuant to paragraph B.5.u(1) above;

- v. PREPA shall organize, compile, retain, and make available to EPA upon request, all documentation generated during the establishment and verification testing, adjustment, and/or modification of Optimal Operating Ranges.
- w. Preparation of Optimization Program Summary Reports
  - (1) Within sixty (60) days of the date of entry of the Consent Decree, for each Generating Unit, PREPA shall prepare an Optimization Program Summary Report that shall include, at a minimum, the following:
    - (a) the then current Optimal Operating Ranges established for each Generating Unit;
    - (b) if not previously submitted pursuant to paragraph B.5.f above, supporting data that was used for determining the established Optimal Operating Range for each parameter; and
    - (c) a summary of any additional work conducted on any hardware component required to obtain optimal operating conditions, including a description of the steps taken to conduct the additional work.
  - (2) The Optimization Program Summary Report shall not include Verification Test Results that will be submitted pursuant to paragraph B.5.s

above, or Notification of Modification documentation that will be submitted pursuant to paragraph B.5.u(2) above.

- (3) The Optimization Program Summary Report shall be prepared by each of PREPA's Plant Managers and the Head of PREPA's Environmental Protection and Quality Assurance Division.
- (4) The Optimization Program Summary Report shall be certified by each of PREPA's Plant Managers and the Head of PREPA's Environmental Protection and Quality Assurance Division in accordance with paragraph G.3 of Section V of the Consent Decree.

x. Certification of Program Completion and Submission of Optimization Program Summary Report

Within sixty (60) days of the date of entry of the Consent Decree, for each Generating Unit, PREPA shall submit to EPA:

- (1) certification by PREPA's Electrical System Director stating that "to the best of my knowledge and belief, the Optimal Operating Ranges have been established and each Generating Unit is operating within those ranges in accordance with the requirements of Section V of the Consent Decree";
- (2) the Optimization Program Summary Report, previously prepared and certified pursuant to paragraph B.5.w above; and
- (3) certification of the Optimization Program Summary Report by PREPA's Electrical System Director in accordance with paragraph G.2 of Section V of the Consent Decree.



6. Continuous Monitoring Program

- a. On or before the date of entry of the Consent Decree, for each Generating Unit, PREPA shall install, repair, replace, calibrate, and test, in accordance with the table provided below in paragraph B.6.b. and/or manufacturers' recommendations, the monitors listed in paragraphs B.6.a(1) through B.6.a(10) below:

- (1) continuous oxygen;
- (2) average cold end air heater temperatures (except for the following Generating Units: San Juan 5 and 6, and South Coast 1 and 2);
- (3) differential pressure across air heaters (except for the following Generating Units: San Juan 5 and 6, and South Coast 1 and 2);
- (4) atomizing steam/fuel oil differential pressure at burner header;
- (5) sootblower steam pressure at header;
- (6) fuel viscosity;
- (7) furnace pressure;
- (8) fuel flow rates;
- (9) gross power in kilowatts; and
- (10) feedwater temperature economizer inlet.

In addition to the monitors listed above, PREPA shall install opacity monitors in accordance with paragraph B.12 of Section V of the Consent Decree and the Air Compliance Attachment. The monitors listed in paragraphs B.6.a(1) through B.6.a(10) above and the opacity monitors shall be referred to collectively as the "Monitors." PREPA shall calibrate, performance test, and conduct quality assurance procedures for such opacity monitors in accordance with paragraphs B.6.d through B.6.f of the Air Compliance Attachment below.

- b. PREPA shall measure, average, record, calibrate, and conduct quality assurance testing for the monitors required above in accordance with the table below. Such activities shall be conducted in a manner consistent with recognized electrical generating industry practices and standards that include

manufacturers' recommendations and standard engineering procedures.

Continuous Monitoring Program Monitor Requirements				
Monitor	Measurement Frequency	Averaging Frequency	Recording Frequency	Quality Assurance
Oxygen	Continuously or no less frequently than every 15 sec	6 minutes	12-minute average	as per Appendix B
Opacity	Continuously or no less frequently than every 10 sec	6 minutes	6-minute average and 10 sec	as per Appendix C
Average Cold End Air Heater Temperatures	Continuously	None	Hourly	Yearly as per PM <sup>1</sup> Program
Differential Pressure Across Air Heaters	Continuously	None	Hourly	Yearly as per PM Program
Atomizing Steam/Fuel Oil Differential Pressure at Burner Header	Continuously	None	Hourly	Yearly as per PM Program
Sootblower Steam Pressure	Continuously by Electronics	None	None	Yearly as per PM Program
Fuel Viscosity	Continuously	None	Hourly	Yearly as per PM Program
Furnace Pressure	Continuously	None	Hourly	Yearly as per PM Program

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<sup>1</sup>"PM Program" is an abbreviation for the "Preventive Maintenance Program" that is required by paragraph B.9 of Section V of the Consent Decree and paragraph B.9 of this Attachment.

Continuous Monitoring Program Monitor Requirements				
Monitor	Measurement Frequency	Averaging Frequency	Recording Frequency	Quality Assurance
Fuel Flow Rate	Continuously	None	Continuously	Yearly as per PM Program
Gross Power	Continuously	None	Continuously	Yearly as per PM Program
Feedwater Temperature at Economizer Inlet	Continuously	None	Hourly	Yearly as per PM Program

- c. PREPA shall calibrate, operate, performance test, and conduct quality assurance procedures for each oxygen monitor in accordance with Appendix B of the Air Compliance Attachment to the Consent Decree.
- d. Within sixty (60) days after installation in accordance with paragraph B.12 of Section V of the Consent Decree and the Air Compliance Attachment, PREPA shall performance test each opacity monitor in accordance with Appendix D of the Air Compliance Attachment to the Consent Decree.
- e. Upon completion of the performance test, conducted in accordance with paragraph B.6.d. above, PREPA shall calibrate and operate each opacity monitor in accordance with Appendix C of the Air Compliance Attachment to the Consent Decree.
- f. In addition, following performance testing and calibration, conducted pursuant to paragraphs B.6.d and B.6.e above, PREPA shall perform ongoing quality assurance assessments for each opacity monitor, in accordance with Appendix C of the Air Compliance Attachment to the Consent Decree.

- g. For the monitors required above by paragraph B.6.a(2) through B.6.a(10), the periodic quality assurance of the Preventive Maintenance Program must ensure that zero or span drifts do not exceed 3% of the upper end of the Optimal Operating Range.
- h. PREPA shall store all data recorded in accordance with the Continuous Monitoring Program for the duration specified in paragraph 106 of Section XVII ("Retention of Records") of the Consent Decree.
- i. PREPA shall:
  - (1) for the data generated by the monitors identified in paragraph B.6.a above, observe the monitoring data generated in order to ensure that the Optimal Operating Ranges are implemented and maintained in accordance with the requirements of the Optimization Program and the Operations and Preventive Maintenance Programs;
  - (2) on a Quarterly basis, in accordance with the formats provided in Appendix E, prepare complete reports for submission in Quarterly Air Compliance Program Status Reports;
  - (3) calculate, on a monthly basis, the heat rate of each Generating Unit (BTU/kilowatt hour);
  - (4) while sootblowing, compare the sootblowing steam pressure data with the Optimal Operating Range for sootblowing established pursuant to the Optimization Program;
  - (5) at a minimum, install alarms in the control rooms for monitors listed above in subparagraphs B.6.a (1), (4), and (7), and install, in the control rooms, alarms for opacity monitors in accordance with the Opacity Monitor Installation Program of the

Air Compliance Attachment. These alarms shall alert an operator when a Generating Unit is operating outside any Optimal Operating Range established and/or verified pursuant to the requirements of the Optimization Program. With respect to the Monitor listed above in subparagraph B.6.a(10), PREPA shall ensure that each Generating Unit is equipped, at a minimum, with an alarm that shall notify an operator when the feedwater temperature at the economizer inlet is below the optimal temperature range;

- (6) respond to any deviations from the Optimal Operating Ranges, in coordination with the Operations and Maintenance Program;
- (7) document any deviation from Optimal Operating Ranges recorded during implementation of the Continuous Monitoring Program. Such documentation shall include:
  - (a) the day and time of any such deviation;
  - (b) the reason for such deviation; and
  - (c) a description of any step(s) taken to correct such deviation.
- (8) on a daily basis, ensure that each Shift Supervisor reviews and records findings regarding the data generated pursuant to the Continuous Monitoring Program and notes any operator response to such data.

j. Telemetry System

- (1) Within one year of the date of entry of the Consent Decree, and thereafter until termination of Section V of the Consent Decree, PREPA shall implement a Telemetric System that electronically transmits to EPA Region II Caribbean Environmental Protection Division and to PREPA's Environmental

Protection and Quality Assurance Division data generated from the oxygen, viscosity, fuel flow, and gross power monitors required above in paragraph B.6.a. and, upon completion of performance testing and calibration in accordance with paragraphs B.6.d and B.6.e above, data generated from the opacity monitors installed pursuant to paragraphs B.12 of Section V of the Consent Decree and the Air Compliance Attachment. Unless circumstances that prevent transmission are beyond PREPA's control, PREPA shall transmit, at all times when a Generating Unit is operating at loads equal to or greater than 50%, data from each monitor above and shall indicate the load and sootblowing status at the relevant Generating Unit.

- (2) PREPA shall install in the EPA Region II Caribbean Environmental Protection Division, all computer hardware and software necessary to transmit data telemetrically as required above by paragraph B.6.j(1). Such computer hardware and software shall enable EPA to receive and store the data transmitted in accordance with paragraph B.6.j(1) above as well as track trends indicated by that data.
- (3) In the event that PREPA modifies its Telemetric System hardware or software, PREPA shall upgrade, as necessary, the computer hardware and software installed in accordance with paragraph B.6.j(2) above in a manner that ensures compatibility with PREPA's Telemetry System hardware and software.
- (4) The United States agrees that the hardware and software installed pursuant to paragraphs B.6.j(1) and B.6.j(2) above will be used solely for purposes of monitoring compliance with Section V of this Consent Decree.

- (5) Notwithstanding paragraph B.6.j(4) above, EPA agrees to be responsible for the reasonable care of the hardware installed for use with the Telemetric System.
- (6) Upon termination of Section V of the Consent Decree, EPA agrees to return to PREPA the hardware and software provided in accordance with paragraph B.6.j(2) above.
- k. PREPA shall organize, compile, retain, and make available to EPA upon request, all documents generated during development and implementation of the Continuous Monitoring Program.
- l. On or before the date of entry of the Consent Decree, and thereafter until termination of Section V of the Consent Decree, PREPA shall implement all elements of the Continuous Monitoring Program.
- m. Preparation of Continuous Monitoring Program Monthly Reports

Within sixty (60) days of the date of entry of the Consent Decree, and every month thereafter until termination of the Decree, each PREPA Plant Manager shall prepare and certify, in accordance with paragraph G.1 of Section V of the Consent Decree, a Continuous Monitoring Program Monthly Report for the preceding month that reviews the following:

- (1) overall condition and performance of the Monitors, including a list of any exceedance of the allowable zero or span drift recorded during calibrations, conducted in accordance with the Continuous Monitoring Program, of the oxygen and opacity monitors;
- (2) failures to address and reasons for failures to address requirements of the Continuous Monitoring Program;

- (3) management response to deviations including hiring of consultants to provide advice on and/or manage the Continuous Monitoring Program; and
- (4) the activities performed and recommendations made by consultants hired in relation to the development and/or implementation of the Continuous Monitoring Program and an explanation for any instance in which PREPA did not follow consultant recommendations.

n. Preparation of Continuous Monitoring Program Summary Reports

- (1) Within sixty (60) days of the date of entry of the Consent Decree, for each Generating Unit, PREPA shall prepare a Continuous Monitoring Program Summary Report that shall include, at a minimum, the following:
  - (a) a list of monitors (excluding the opacity monitors to be installed pursuant to paragraph B.12 of Section V of the Consent Decree and the Air Compliance Attachment) that indicates whether the monitor was installed, repaired and/ or refurbished;
  - (b) for each monitor listed in paragraphs B.6.a(1) through B.6.a.(10) above, the calibration and test methods that were used to calibrate and test the monitor;
  - (c) operations and preventive maintenance checklists and procedures developed and instituted to operate and maintain the monitors, including those prepared for the operation and maintenance of the opacity monitors to be installed pursuant to paragraph B.12 of Section V of the Consent Decree and the Air Compliance Attachment;



- (d) a description of the management actions and logs developed and instituted for ongoing management review and response to personnel performance and to deviations and reasons for deviations from the Optimal Operating Ranges; and
    - (e) a description of the activities performed and recommendations made by consultants in relation to the Continuous Monitoring Program. Where PREPA does not follow consultant recommendations, PREPA shall provide the basis for not following such recommendations.
  - (2) The Continuous Monitoring Program Summary Report shall be prepared by each of PREPA's Plant Managers.
  - (3) The Continuous Monitoring Program Summary Report shall be certified by each of PREPA's Plant Managers in accordance with paragraph G.1 of Section V of the Consent Decree.
- o. Certification of Program Implementation and Submission of Continuous Monitoring Program Summary Report

Along with the first Quarterly Air Compliance Program Status Report submitted after the date of entry of the Consent Decree pursuant to paragraph C below, for each Generating Unit, PREPA shall submit to EPA:

- (1) certification by PREPA's Electrical System Director stating:

"In accordance with the Continuous Monitoring Program required by Section V of the Consent Decree, to the best of my knowledge and belief:

- (a) all monitors listed in paragraphs B.6.a.(1) through B.6.a(10) have been installed, repaired, replaced, calibrated, and tested; and
  - (b) all other requirements of the Continuous Monitoring Program are being implemented"; and
- (2) the Continuous Monitoring Program Summary Report, previously prepared and certified pursuant to paragraph B.6.n above.

7. Fuel Quality Program

- a. On or before the date of entry of the Consent Decree, and thereafter until termination of Section V of the Consent Decree, PREPA shall combust and continue to combust, at each Generating Unit, only fuel that meets the specifications listed below:
  - (1) no greater than 8% asphaltenes by weight;
  - (2) no greater than 1.5% sulfur by weight;
  - (3) no greater than 150 ppm vanadium by weight; and
  - (4) viscosity value less than 350 SFS at 122°F.
- b. All sampling and analysis conducted for the parameters listed immediately below in this paragraph shall be conducted in accordance with the method of analysis set forth below. All other sampling and analysis required shall be conducted in accordance with appropriate ASTM or IP methods.
  - (1) asphaltenes: IP 143 or ASTM 3279;
  - (2) sulfur: ASTM D4294;

- (3) vanadium (for all Power Plants except the San Juan Power Plant): ASTM D1548, ASTM D5708; and/or ASTM D5863 (Test Method A);

vanadium (San Juan Power Plant): ASTM D5863B, except where vanadium measured by ASTM D5863 (Test Method B) is equal to or greater than 110 ppm, ASTM D1548, ASTM D5708, and/or ASTM D5863 (Test Method A) must be used; and

- (4) viscosity: ASTM D445 or ASTM D88.

c. Prior to receipt of any shipment of fuel, PREPA shall receive from the fuel supplier a certified laboratory analysis of the fuel to be delivered for the following parameters:

- (1) gross heat content, Btu/lb;
- (2) API gravity;
- (3) viscosity (Saybolt @122°F);
- (4) asphaltenes, ppmw;
- (5) sulfur, wt%;
- (6) vanadium, ppmw;
- (7) sodium plus potassium, ppmw;
- (8) calcium, ppmw;
- (9) ash, wt%;
- (10) filterable solids and water (by volume% or by wt%); and
- (11) pour point, °F.

- d. If analytical data received pursuant to paragraph B.7.c. above indicates any deviation from the fuel specifications required for asphaltene, sulfur, vanadium, and viscosity parameters in paragraph B.7.a above, PREPA shall accept shipment of the fuel only if such deviation can be corrected prior to combustion.
- e. Prior to combustion, PREPA shall sample and analyze the composition of any fuel blended after receipt of shipment (including, but not limited to blending due to additions to reserve tanks or mixing of fuel from various Power Plant locations) for asphaltenes, sulfur, vanadium, and viscosity, in accordance with paragraph 7.b. above, to ensure that such fuel meets the specifications for those parameters set forth above in paragraph 7.a.
- f. Any analysis conducted in accordance with paragraph 7.e. above shall be certified by both a laboratory supervisor and the chemist who performed such analysis (certification may be made by one person where the laboratory supervisor is also the chemist who performed such analysis).
- g. If analytical data generated pursuant to paragraph B.7.e. above indicates any deviation from the fuel specifications required in paragraph B.7.a above, PREPA shall combust such fuel only after such deviation has been corrected.
- h. PREPA shall provide taps for sampling prior to each oil heater at each Generating Unit. Upon request of, and in the presence of, a representative of EPA, EQB, and/or the Air Compliance Auditor required by Section V of the Consent Decree, PREPA shall fill containers supplied by such organizations with samples of the fuel from those taps.
- i. PREPA shall compile, retain, and make available to EPA, sampling data and analysis data that document deviations, if any, from the fuel specifications required above in paragraph B.7.a.

- j. For any deviation, from the fuel specifications of paragraph B.7.a above, PREPA shall prepare a brief description and explanation of how such deviation was corrected through blending conducted pursuant to paragraph B.7.g.
- k. PREPA shall compile, retain, and make available to EPA upon request all sampling and analysis documents generated pursuant to the Fuel Quality Program.
- l. On or before the date of entry of the Consent Decree, and thereafter until termination of Section V of the Consent Decree, PREPA shall implement all elements of the Fuel Quality Program.
- m. Preparation of Fuel Quality Program Monthly Reports

Within sixty (60) days of the date of entry of the Consent Decree, and every month thereafter until termination of the Consent Decree, the Administrator of the Fuel Office shall prepare and certify, in accordance with paragraph G.3 of Section V of the Consent Decree, a Fuel Quality Program Monthly Report, for the preceding month, that shall include the following:

- (1) review and evaluation of the implementation of the Fuel Quality Program;
- (2) a summary table indicating the sulfur content, asphaltene content, vanadium content, and viscosity of the fuel sampled and analyzed;
- (3) a list of any failures to meet any of the requirements of the Fuel Quality Program and the responses made to correct such failures.

- n. Preparation of Fuel Quality Program Summary Reports

- (1) Within sixty (60) days of the date of entry of the Consent Decree, for each Power Plant,

PREPA shall prepare a Fuel Quality Program Summary Report that describes the procedures for implementation of the Fuel Quality Program at each Power Plant.

- (2) The Fuel Quality Program Summary Report shall be prepared by the Administrator of PREPA's Fuel Office.
- (3) The Fuel Quality Program Summary Report shall be certified by the Administrator of PREPA's Fuel Office in accordance with paragraph G.3 of Section V of the Consent Decree.

- o. Certification of Program Implementation and Submission of Fuel Quality Program Summary Report

Along with the first Quarterly Air Compliance Program Status Report submitted after the date of entry of the Consent Decree pursuant to paragraph C below, PREPA shall submit to EPA:

- (1) certification by PREPA's Electrical System Director stating that "to the best of my knowledge and belief, the Fuel Quality Program is being implemented in accordance with the requirements of Section V of the Consent Decree"; and
- (2) the Fuel Quality Program Summary Report, previously prepared and certified pursuant to paragraph B.7.n above.

#### 8. Spare Parts Inventory Program

- a. On or before the date of entry of the Consent Decree, and thereafter until termination of Section V of the Consent Decree, PREPA shall maintain a Spare Parts Inventory of spare hardware components for each Generating Unit, including at least those components required for the systems identified in paragraph B.3.a(6), above, to ensure

that repairs to and replacement of any such hardware component shall be performed with as little interruption to the operation of a Generating Unit as possible.

- b. On or before the date of entry of the Consent Decree, and thereafter until termination of Section V of the Consent Decree, PREPA shall develop, maintain, retain, and make available to EPA upon request, a computerized Spare Parts Inventory Tracking System ("SPITS") that contains, for each Generating Unit, the following information for each hardware component included in the Spare Parts Inventory:
  - (1) the location of replacement components in the Spare Parts Inventory and, if not in the Spare Parts Inventory, then the manufacturers from whom the component can be procured;
  - (2) the lead and delivery time for procurement; and
  - (3) the minimum quantity of each replacement component that may be maintained in the Spare Parts Inventory before such part must be reordered. This number shall be determined by evaluating, at the very least, the lead and delivery time for procurement and the frequency at which each component is required to be replaced in the equipment. By purchasing when or before inventory reaches this quantity, PREPA shall ensure that necessary parts are always on hand.
- c. On or before the date of entry of the Consent Decree, and thereafter until termination of Section V of the Consent Decree, PREPA shall

develop, maintain, and retain the following lists and/or logs with respect to the components in the Spare Parts Inventory:

- (1) a list/log of the average frequency at which such hardware components are required to be replaced in equipment;
  - (2) a list/log of the dates of purchase and dispatch for each component replaced from the date of entry of the Consent Decree until termination of Section V of the Consent Decree; such list/log shall specify the reason for replacement (e.g., preventive maintenance, excessive wear, etc.);
  - (3) a list indicating components that may only be replaced during an outage; and
  - (4) a list indicating components that can be replaced without conducting an outage of a Generating Unit and specifying which of those components can be replaced without interference with a Generating Unit's ability to comply with Rule 403 of the PRRCAP.
- d. Based upon evaluation of the information gathered, pursuant to paragraphs B.8.b. and B.8.c above, PREPA shall implement and document the implementation of hardware component purchasing and replenishment.
- e. PREPA shall compile, retain, and make available to EPA upon request, all documents generated pursuant to the Spare Parts Inventory Program.
- f. Preparation of Spare Parts Inventory Program Quarterly Reports

Within thirty (30) days of the end of each Quarter, until termination of Section V of the Consent Decree, each Plant Manager and the Head of the Purchasing Division shall prepare and certify,



in accordance with paragraph G.3 of Section V of the Consent Decree, a Spare Parts Inventory Program Quarterly Report, for the preceding Quarter, in which they shall:

- (1) review and evaluate the implementation of the Spare Parts Inventory Program;
- (2) list instances when the purchasing and replenishment schedules were not met;
- (3) list spare parts that were not available from the Spare Parts Inventory within twenty-four hours;
- (4) address any failure to meet any requirement(s) of the Spare Parts Inventory Program; and
- (5) describe the activities performed and recommendations made by any consultant hired in relation to the development and/or implementation of the Spare Parts Inventory Program and an explanation for any instance in which PREPA did not follow consultant recommendations.

g. Preparation of Spare Parts Inventory Program Summary Report

- (1) Within sixty (60) days of the date of entry of the Consent Decree, PREPA shall prepare a Spare Parts Inventory Program Summary Report that describes the procedures for implementation of the Spare Parts Inventory Program.
- (2) The Spare Parts Inventory Summary Report shall be prepared by each of PREPA's Plant Managers and the Head of PREPA's Purchasing Division.

- (3) The Spare Parts Inventory Summary Report shall be certified by each of PREPA's Plant Managers and the Head of PREPA's Purchasing Division in accordance with paragraph G.3 of Section V of the Consent Decree.

h. Certification of Program Development and Implementation and Submission of Spare Parts Inventory Program Summary Report

Along with the first Quarterly Air Compliance Program Status Report submitted after the date of entry of the Consent Decree pursuant to paragraph C below, for each Power Plant, PREPA shall submit to EPA:

- (1) certification by PREPA's Director of Administrative Services and Electrical System Director stating that "to the best of my knowledge and belief, the Spare Parts Inventory Program has been developed and is being implemented in accordance with the requirements of Section V of the Consent Decree"; and
- (2) the Spare Parts Inventory Program Summary Report, previously prepared and certified pursuant to paragraph B.8.g above.

9. Operations and Preventive Maintenance Programs

- a. On or before the date of entry of the Consent Decree, and thereafter until termination of Section V of the Consent Decree, PREPA shall develop and begin implementation of an Operations and Preventive Maintenance Programs that include, at a minimum, the following elements:

- (1) operation checklists and preventive maintenance checklists for each Generating Unit with schedules for inspection;

- (2) operations activities and preventive maintenance activities relating to hardware components that affect or potentially affect compliance with Rules 403 or 404 of the PRRCAP, including but not limited to all components listed above in paragraph B.3.a(6) and all monitors required above in paragraph B.6.a. and upon installation, testing, and calibration of the opacity monitors installed pursuant to paragraphs B.12 of Section V of the Consent Decree and the Air Compliance Attachment;
- (3) visible emission readings;
- (4) Operations Manuals for each Power Plant;
- (5) Air Compliance Program Courses for all PREPA Power Plant and Environmental Protection and Quality Assurance Division personnel involved with or responsible for any aspect of air compliance or implementation of any Air Compliance Program in the Consent Decree ("Air Compliance Personnel"); and
- (6) management review and reporting.

b. Operations Checklists and Preventive Maintenance Checklists

PREPA shall develop Operations Checklists and Preventive Maintenance Inspection Checklists ("Checklists") for each Generating Unit. PREPA shall conduct inspections using manufacturers' methods and standard electrical generating industry practices. The Checklists shall include a "Remarks" section and shall identify the name of the employee who conducted the inspections. PREPA shall modify its Checklists by adding inspections of additional hardware components, if necessary to ensure compliance with Rules 403 and 404 of the PRRCAP. The Checklists shall, at a minimum, include observations and documentation of the following

equipment (where the Generating Unit inspected is equipped with such hardware) for the following conditions:

(1) Fuel Oil Hardware:

(a) Fuel Oil Pump

Rotors and casing -- check for leaks and vibrations.

(b) Fuel Oil Heaters

Proper functioning and capacity to meet ramp-up requirement.

(c) Viscometer

Proper functioning.

(d) Burners

Flame appearance: color, robustness  
homogeneity, continuity, & direction;

burner tip: condition, size, oil, air,  
steam flow;

burner gun: adequate steam pressure,  
current distances (gun length), tip  
angle;

atomizers/oil and steam piping & valves:  
clogging;

fuel oil and steam gauges: operating  
pressure and temperature;

flame scanners: positioning;

burner scanner fans: vibration;

Peabody-type burners: auxiliary ducts, register assembly, yoke coupling, burner throat: proper functioning and corrosion;

CE-type burners: nozzle adjustment mechanism, ignitor and ignitor fan: proper functioning and corrosion; and

Trifecta valves: pressure and leaks.

(2) Combustion Controls

(a) Combustion Control Systems

Tuning and characterization curves for load swings.

(b) Atomizing Steam Controls

Proper functioning.

(c) Alarm Panel

Set points: observe to determine if in proper ranges. If Optimal Operating Ranges have been established for a parameter being monitored, PREPA shall ensure that the alarms are set at points so as to notify an operator when a Generating Unit is approaching outer limits of an established range.

(3) Combustion Air

(a) Windbox

Diffusers/swirlers, airslides, registers, air dampers (CE type) or slides (Peabody type) duct and furnace casing integrity, tilting mechanism: condition, position, installation, mobility and corrosion;

(b) Air Heaters

Seals, sector plates, rotor casing, heating elements, cleaning system, outer casing, mechanical parts: proper functioning, deposits and corrosion;

(c) Fans

Forced-draft, induced-draft, gas-recirculation, scanner and ignitor: rotor and blade malfunctions, noise levels, vibration; and

(d) Steam Coils

Drainers: steam/water flow conditions; and

Control valves: sticking, mechanical parts corrosion.

(4) Flue Gas Handling

(a) Ductwork

Economizer to air heater, air heater to windbox, inlet and outlet of gas recirculation fan, expansion joints, furnace hopper, hopper drains: leakage, integrity, corrosion.

(b) Sootblowing Systems

Lance and nozzle: corrosion;

Feed pipe: number operating;

Carriage travel: range of movement; and

Power pack/poppet and head assembly: proper functioning.

(5) Steam Cycle

(a) Pressure Parts

Water wall tubes, furnace walls, superheater, low temperature superheater, preheater, economizer, air heater, steam coil air preheater: corrosion, plugging (deposits), integrity;

(b) Feedwater Heater

Proper functioning, sufficient capacity and temperature differentials.

(6) Monitors

Integrity of monitor hardware.

c. Operations Activities and Preventive Maintenance Program Activities:

On or before the date of entry of the Consent Decree, and thereafter until termination of Section V of the Consent Decree, PREPA shall perform the Operations Activities and Preventive Maintenance activities listed below in order to ensure that each Generating Unit achieves and maintains compliance with Rules 403 and 404 of the PRRCAP:

- (1) operate each Generating Unit within the Optimal Operating Ranges established and/or verified pursuant to the Optimization Program; PREPA shall not be required to operate each Generating Unit within the Optimal Operating Ranges established and/or verified pursuant to the Optimization Program during startup, shut-down (loads below 50%), and malfunction periods as defined by Section I of Section V of the Consent Decree or during any period, as necessary but not to

exceed fifteen (15) minutes, in which PREPA is taking a burner elevation in or out of service in conformance with PREPA's Operation & Preventive Maintenance Program or for routine load management purposes;

- (2) respond and document operator response to data and analysis generated pursuant to the Continuous Monitoring Program;
- (3) inspect and analyze, in accordance with paragraphs B.3.a(1) - (3) and B.3.a(5), each component listed above in paragraph B.9.b. Documentation generated during such inspection and analysis shall include:
  - (a) instrumentation monitoring data and analysis;
  - (b) observation checklists;
  - (c) logs or notes on inspection activities; and
  - (d) contractor reports and/or recommendations where such reports and/or recommendations were made;
- (4) implement inspections pursuant to the Checklists developed pursuant to the Operations and Preventive Maintenance Program in order to determine if each Generating Unit is functioning properly;
- (5) water-wash each boiler (furnace and back passage surfaces), at a minimum, every eighteen months. Where it is evident that a Generating Unit will not maintain compliance absent more frequent water-washing, components of the Generating Unit shall be water-washed as frequently as necessary to maintain compliance with Rule 403 of the PRRCAP;
- (6) steam clean the tubes of each Generating Unit two to four times per day, at a maximum



frequency of twice per shift to ensure compliance with Rule 403 of the PRRCAP. This activity shall be conducted at optimal oxygen levels established for sootblowing mode pursuant to the requirements of the Optimization Program set forth above in the Air Compliance Attachment;

- (7) clean burner tips and guns at a frequency of at least one elevation per working day per operating Generating Unit or more frequently as indicated by the gauges for atomizing steam/fuel oil differential pressure at each burner or less frequently as required by emergency conditions;
  - (8) coordinate the Operations and Preventive Maintenance Programs with the Continuous Monitoring Program for determining deficiencies, including inspection of alarms and, where necessary, repair of alarms within two working days;
  - (9) conduct an Environmental Outage and a thorough Environmental Outage Operations and Preventive Maintenance inspection using Checklists, at least every eighteen months at each Generating Unit; and
  - (10) document any deficiencies discovered during performance of the Operations and Preventive Maintenance Programs activities required by paragraphs B.9(c)(1) through B.9.c(9) above, analyze and document the reasons for the deficiencies, and document the steps taken to correct any deficiencies (including any repairs or replacement of hardware and any consultants hired to provide advice on or manage any aspects of the Operations and Preventive Maintenance Programs).
- d. PREPA Visible Emission Readings: On or before the date of entry of the Consent Decree, and

thereafter until termination of Section V of the Consent Decree, PREPA shall conduct bi-weekly visible emissions testing in accordance with the requirements listed below:

- (1) visible emission readings shall be conducted by certified visible emission readers in accordance with Test Method 9, 40 C.F.R. Part 60 Appendix A ("Method 9"), for a minimum of six minutes;
  - (2) all visible emission readings recorded shall be recorded in accordance with Method 9 and retained and made available to EPA upon request; and
  - (3) where a PREPA visible emission reader records, in accordance with Method 9, an average opacity level greater than 20% opacity for a period equal to or greater than six (6) minutes, PREPA shall review the operating conditions of the relevant Generating Unit to determine and document the cause of any emissions with such elevated opacity, correct any deficiency, and document the steps taken to correct any deficiency. PREPA shall also notify EPA of such visible emission reading(s) in accordance with paragraph C.2 of Section V of the Consent Decree where such reading indicates non-compliance with Rule 403 of the PRRCAP.
- e. Operations Manual: As soon as possible, but no later than one (1) year from the date of entry of the Consent Decree, PREPA shall compile an Operations Manual for each Power Plant that shall include the items listed below:
- (1) a description of each Generating Unit, including at a minimum, the serial number, year of manufacture, fuel firing capacity, steam production rate, and power generating capacity of each Generating Unit;

- (2) checklists used in conducting inspection and maintenance activities conducted pursuant to paragraph B.9.c(3);
  - (3) Optimal Operating Ranges for each Generating Unit at the Power Plant, as established pursuant to the Optimization Program; and
  - (4) the methods and procedures to be relied upon by operations personnel that were developed using manufacturers' recommendations, experience attained through prior operations, and standard industry practice.
- f. PREPA shall make each Operations Manual available to its Air Compliance Personnel, to EPA upon request, and to the Air Compliance Auditor required pursuant to paragraph F of Section V of the Consent Decree.
- g. PREPA shall publish each Operations Manual in Spanish, and thereafter until termination of Section V of the Consent Decree, PREPA shall maintain and revise copies of the Operations Manual in Spanish at each Power Plant.
- h. As soon as possible, but no later than two (2) years from the date of entry of the Consent Decree, PREPA shall translate each Operations Manual into English. From the date of translation until termination of Section V of the Consent Decree, PREPA shall maintain and revise copies of the English Operations Manual at each Power Plant.
- i. Air Compliance Program Courses
  - (1) By the date of entry of the Consent Decree, PREPA shall:
    - (a) develop Air Compliance Program Courses to train Air Compliance Personnel how to

implement the Air Compliance Programs required pursuant to Section V of the Consent Decree; and

- (b) prepare a list indicating which Air Compliance Program Course(s) shall be presented to which classification(s) of Air Compliance Personnel.
- (2) As soon as possible, but no later than two (2) years from the date of entry of the Consent Decree, PREPA shall complete presentation of the appropriate Air Compliance Program Course(s) to all Air Compliance Personnel and, thereafter, shall present the appropriate Air Compliance Program Course(s) to any new Air Compliance Personnel prior to their assumption of responsibilities that relate to implementation of the Air Compliance Programs.
  - (3) PREPA shall present, on an annual basis, refresher Air Compliance Program Courses to all Air Compliance Personnel.
  - (4) PREPA shall compile, retain, and make available to EPA upon request, a list of all Air Compliance Personnel trained and the dates upon which such personnel were trained.
  - (5) The Air Compliance Program Courses shall emphasize the following topics:
    - (a) implementation of the Continuous Monitoring, Spare Parts Inventory and Fuel Quality Analysis Programs;
    - (b) implementation of the Operations and Preventive Maintenance Programs and, in particular, inspection of the hardware components, analysis of deficiencies,

analysis of operations and correction of problems that may result in noncompliance with Rules 403 and 404 of the PRRCAP;

- (c) the Optimal Operating Ranges established by the Optimization Program and the routine adjustments to be made to achieve such ranges;
- (d) the location and identification of documents that contain manufacturers' recommendations; and
- (e) methods for analyzing, reporting and responding to actual or potential problems with the operation or maintenance of each Generating Unit.

j. Preparation of Operations and Preventive Maintenance Monthly Reports

Within sixty (60) days of the date of entry of the Consent Decree, and every month thereafter until termination of Section V of the Consent Decree, for each Power Plant, the Power Plant Manager and the Head of the Maintenance and Technical Services Division shall prepare and certify, in accordance with paragraph G.3 of Section V of the Consent Decree, an Operations and Preventive Maintenance Programs Monthly Report, for the preceding month, that shall include the following:

- (1) a review and evaluation of the implementation of the Operations and Preventive Maintenance Programs;
- (2) a list of any major hardware components installed, repaired, and/or replaced;
- (3) a list of any failure to perform any requirement of the Operations and Preventive Maintenance Programs, including a list of all

Operations and Preventive Maintenance Program Activities, required by paragraph B.9.c. above, that were not performed during the preceding month, along with a discussion of the basis for such non-performance;

- (4) for each Generating Unit, a schedule of environmental outages to occur during the upcoming month and any revision of the prior month's environmental outage schedule, along with an explanation of any such revision;
- (5) a description of any activity performed and any recommendation made by any consultant hired in relation to the development and/or implementation of the Operations and Preventive Maintenance Programs and, if PREPA did not follow any contractor recommendation, the reason and basis for not following such recommendation; and

- k. PREPA shall organize, compile, retain, and make available to EPA upon request, all documentation generated pursuant to the Operations and Preventive Maintenance Programs.
- l. On or before the date of entry of the Consent Decree, and thereafter until termination of Section V of the Consent Decree, PREPA shall implement the Operations and Preventive Maintenance Programs in accordance with the requirements of paragraphs B.9 of Section V of the Consent Decree and the Air Compliance Attachment.
- m. Preparation of Operations and Preventive Maintenance Programs Summary Report
  - (1) Within sixty (60) days of the date of entry of the Consent Decree, for each Power Plant, PREPA shall prepare an Operations and Preventive Maintenance Programs Summary Report that describes the procedures for implementation of the Operation and

Preventive Maintenance Programs. The Operations and Preventive Maintenance Summary Report shall also include the following:

- (a) the list of all hardware components determined to be deficient during the Inspection and Analysis Program that were not installed, repaired, and/or replaced and the schedule for installation, repair, and/or replacement of such hardware components (created pursuant to paragraph B.4.d(1) (b) above);
  - (b) a description of the hardware upgrade activities conducted after completion of the Hardware Upgrade Program in accordance with paragraph B.4.d(1) (b) above;
  - (c) all checklists developed pursuant to the Operations and Preventive Maintenance Programs;
  - (d) all water-washing schedules for the first Quarter; and
  - (e) a schedule of Environmental Outages, including highlights of any revision of a previously-submitted environmental outage schedule.
- (2) The Operation and Preventive Maintenance Programs Summary Report shall be prepared by each of PREPA's Plant Managers and the Head of the Maintenance and Technical Services Division.
  - (3) The Operations and Preventive Maintenance Programs Summary Report shall be certified by each of PREPA's Plant Managers and the Head of the Maintenance and Technical Services

Division in accordance with paragraph G.3 of Section V of the Consent Decree.

- n. Certification of Programs Implementation and Submission of Operation and Preventive Maintenance Programs Summary Reports

Along with the first Quarterly Air Compliance Program Status Report submitted after the date of entry of the Consent Decree pursuant to paragraph C below PREPA shall submit to EPA:

- (1) certification by PREPA's Electrical System Director stating that "to the best of my knowledge and belief, the Operation and Preventive Maintenance Programs are currently being implemented in accordance with the requirements of Section V of the Consent Decree"; and
- (2) the Operation and Preventive Maintenance Programs Summary Report (along with the checklists, schedules, and description required above by paragraph B.9.m), previously prepared and certified pursuant to paragraph B.9.m above; and
- (3) a description of the Air Compliance Program Courses prepared by the Electrical System Director.

10. Economizer Sootblower Installation Program.

- a. In addition to any existing sootblowers, PREPA shall install and operate sootblowers at the economizer of each Generating Unit listed below in subparagraph B.10.b., in accordance with the schedule indicated therein, in order to ensure long-term operation of the Generating Units in compliance with Rule 403 of the PRRCAP. Installation of additional sootblowers is not



required for the following Generating Units: San Juan 5, San Juan 6, South Coast 1, and South Coast 2.

- b. The Economizer Sootblower Installation Program shall comply with the schedule provided below:

**COMPLETION DATES OF THE ECONOMIZER SOOTBLOWER  
INSTALLATION PROGRAM**

<b>SAN JUAN STEAM PLANT</b>	
<b>Generating Unit</b>	<b>Completion Date</b>
7	May 31, 1997
8	November 16, 1997
9	September 30, 1997
10	June 30, 1997

<b>PALO SECO STEAM PLANT</b>	
<b>Generating Unit</b>	<b>Completion Date</b>
1	April 30, 1997
2	August 31, 1997
3	May 31, 1997
4	November 30, 1997

<b>AGUIRRE STEAM PLANT</b>	
<b>Generating Unit</b>	<b>Completion Date</b>
1	May 31, 1997
2	April 30, 1997

SOUTH COAST STEAM PLANT	
Generating Unit	Completion Date
3	April 30, 1997
4	May 31, 1997
5	March 31, 1996
6	May 31, 1996

c. Certification

For each Generating Unit subject to paragraph B.10.a, within thirty (30) days from the date of entry of the Consent Decree, or within thirty (30) days from the date on which the two sootblowers were installed at the economizer, whichever is later, PREPA's Electrical System Director shall submit to EPA certification stating that "to the best of my knowledge and belief, the sootblowers have been installed and are operating at [insert identification of specific Generating Unit here]."

11. Balanced Draft Conversion Program

- a. PREPA shall convert the following Generating Units from pressurized generating units to balanced draft generating units: San Juan 7, 8, 9, and 10, and Palo Seco 3 and 4.
- b. Conversion pursuant to the Balanced Draft Conversion Program shall comply with the schedule provided below:

San Juan 7	July 1994
San Juan 8	February 1995
San Juan 9	February 1997
San Juan 10	October 1996

Palo Seco 3  
Palo Seco 4

September 1993  
March 1992

c. Certification

For each Generating Unit subject to paragraph B.11.a, within thirty (30) days of the date of entry of the Decree, or within 30 days from the date upon which the Generating Unit has completed conversion, whichever is later, PREPA's Electrical System Director shall submit to EPA certification stating that "to the best of my knowledge and belief, [insert identification of specific Generating Unit here] has completed conversion pursuant to paragraph B.11 of the Air Compliance Attachment of the Consent Decree on [insert applicable date here]."

12. Opacity Monitor Installation Program

- a. PREPA shall install new opacity monitors at the stacks of each Generating Unit and operate such monitors in accordance with the Continuous Monitoring Program and Operations and Preventive Maintenance Programs in order to ensure long-term operation of each Generating Unit in compliance with Rule 403 of the PRRCAP.
- b. Within sixty (60) days after installation of an opacity monitor, PREPA shall conduct performance testing of such monitor pursuant to paragraph B.6.d of the Air Compliance Attachment and shall calibrate such monitor pursuant to paragraph B.6.e of the Air Compliance Attachment.
- c. Upon completion of installation of an opacity monitor, PREPA shall install, in the control room for such monitor, an alarm for such monitor.
- d. PREPA shall complete installation of new opacity monitors as soon as possible, but no later than September 30, 1998.

e. Certification

Within thirty (30) days of completion of testing of each opacity monitor pursuant to paragraph B.12.b. above, PREPA shall submit to EPA certification by PREPA's Electrical System Director stating that "to the best of my knowledge and belief:

- (1) a new opacity monitor has been installed at the stack of [insert identification of specific Generating Unit(s) here] in accordance with the Opacity Monitor Installation Program of Section V of the Consent Decree on [insert applicable date here] and such monitor is being operated pursuant to the Continuous Monitoring Program and Operations and Preventive Maintenance Programs;
- (2) an alarm has been installed in the control room for such monitor; and
- (3) in accordance with the Continuous Monitoring Program, such monitor has been performance tested in accordance with paragraph B.6.d of the Air Compliance Attachment and calibrated in accordance with paragraph B.6.e of the Air Compliance Attachment."

C. Quarterly Air Compliance Program Status Reports

1. Within thirty (30) days of the end of each Quarter, as defined by Section I of Section V of the Consent Decree, until termination of Section V of the Consent Decree, PREPA's Power Plant Managers and the Head of Environmental Protection and Quality Assurance shall compile and submit, to EPA Region II and to the Region II Caribbean Environmental Protection Division, a Quarterly

Air Compliance Program Status Report. Each such Quarterly Air Compliance Program Status Report, shall include, at a minimum,

- a. all of the following certified monthly reports for the preceding Quarter:
  - (1) the Continuous Monitoring Program Monthly Reports required above in paragraph B.6.m;
  - (2) the Fuel Quality Program Monthly Reports required above in paragraph B.7.m; and
  - (3) the Operations and Preventive Maintenance Programs Monthly Reports required above in paragraph B.9.j;
- b. the certified Spare Parts Inventory Program Quarterly Report required above in paragraph B.8.f;
- c. for each Generating unit at which Optimization Verification testing was commenced during the preceding Quarter, the date (month/day/year) upon which Optimization Verification testing was commenced;
- d. reports for each Monitor required pursuant to the Continuous Monitoring Program, prepared in accordance with the formats provided in Appendix E of the Air Compliance Attachment to the Consent Decree;
- e. the results of and responses to any performance and quality assurance testing that was conducted during the preceding Quarter pursuant to the Continuous Monitoring Program;
- f. a schedule of boiler water-washing to occur during the upcoming Quarter, as required by the Operations and Preventive Maintenance Programs, and any revision made to the water-washing schedule of the prior Quarter;

- g. documentation (not previously submitted pursuant to paragraph B.9.d(3) above) of visible emissions observations conducted pursuant to Method 9, during which emissions exceeded 20% average opacity for any period equal to or greater than six minutes, and documentation that demonstrates why emissions with such elevated opacity occurred and the responses and steps taken to correct any deviation;
- h. a list that indicates which Air Compliance Program courses were presented to Air Compliance Personnel during the preceding Quarter;
- i. summaries of any modifications made during the preceding Quarter to the Continuous Monitoring, Spare Parts Inventory and/or Operations and Preventive Maintenance Programs; and
- j. summaries of and responses to the monthly analyses, conducted pursuant to paragraph B.6.i(3) above, of each Generating Unit's heat rate and the impact of each Generating Unit's heat rate upon the Generating Unit's ability to comply with Rule 403 of the PRRCAP and Section V of the Consent Decree.

2. Program Summary Report Submissions

Along with the first Quarterly Air Compliance Program Status Report submitted after entry of the Consent Decree, PREPA shall submit the following:

- a. the Continuous Monitoring Program Summary Report and certification as required by paragraphs B.6.n and B.6.o;
- b. the Fuel Quality Program Summary Report and certification as required by paragraphs B.7.n and B.7.o;

- c. the Spare Parts Inventory Program Summary Report and certification as required by paragraphs B.8.g and B.8.h; and
  - d. the Operations and Preventive Maintenance Programs Summary Reports and certification as required by paragraphs B.9.m and B.9.n.
3. All Quarterly Air Compliance Program Status Reports shall be certified by PREPA's Electrical System Director and the Planning and Environmental Protection Director in accordance with paragraph G.2 of Section V of the Consent Decree.

D. Independent Air Compliance Auditor Program

1. Within 120 days of receipt of written Authorization to Proceed from EPA, PREPA shall contract with an auditor ("Air Compliance Auditor") to review all documents and observe activities (when necessary for the Air Compliance Auditor's review of documents) which pertain to compliance with Section V of the Decree, in order to verify the accuracy of PREPA's submissions made pursuant to paragraphs B through D and F of Section V of the Consent Decree. The Air Compliance Auditor shall be a certified environmental auditor and a licensed engineer authorized to practice in the Commonwealth of Puerto Rico and shall be qualified in the following areas:
- a. principles of combustion;
  - b. design influences on combustion efficiency;
  - c. combustion processes and equipment;
  - d. combustion and boiler effects on emissions;
  - e. fuel composition effects on emissions;
  - f. technology to monitor combustion processes and emissions; and

- g. principles of dispatching generating units.

Further, the Air Compliance Auditor shall employ at least one (1) employee who is certified to conduct visible emissions readings pursuant to 40 C.F.R. Part 60, Appendix A, Method 9 ("Method 9"). Such visible emissions reader need not be a licensed engineer authorized to practice in the Commonwealth of Puerto Rico.

2. The Air Compliance Auditor shall:

- a. audit each Power Plant each Quarter, or more frequently if necessary, for purposes of verifying the accuracy of submissions made by PREPA pursuant to Section V of the Consent Decree;
- b. have access to all reports and documents generated pursuant to, or in relation to, requirements of Section V of the Consent Decree, and areas of each Power Plant that relate to the operation and maintenance of the Generating Units and to the compliance of each Generating Unit with the requirements of the Consent Decree and Rules 403 and 404 of the PRRCAP;
- c. review all reports and documents generated pursuant to, or in relation to, the requirements of Section V of the Consent Decree or Rules 403 and 404 of the PRRCAP;
- d. observe, as necessary, activities and equipment related to PREPA's compliance with Section V of the Consent Decree or Rules 403 and 404 of the PRRCAP;
- e. maintain records of all data, information, observations and results of testing that are generated by the Air Compliance Auditor in connection with its activities conducted pursuant to Section V of the Consent Decree, including records pertaining to each of the visible emissions readings for each Generating Unit conducted by the Air Compliance Auditor;



- f. conduct visible emissions readings bi-weekly at each Generating Unit, in accordance with the requirements of Method 9, for thirty (30) consecutive minutes if the first six-minute reading records opacity greater than 20%;
- g. notify PREPA and EPA, within one hour of any visible emissions reading, of any violation of Rule 403 recorded during visible emissions readings taken pursuant to paragraph D.2.e above; and
- h. submit a report with regard to each Power Plant, one month following the submission of each of PREPA's Quarterly reports, simultaneously to both EPA and PREPA, that describes the activities the Air Compliance Auditor conducted and the assessments the Air Compliance Auditor made during the preceding Quarter. Such "Compliance Assessment Report" shall include:
  - (1) a description of the review, observation and testing procedures followed;
  - (2) identification of the reports, documents, and equipment reviewed, observed, and/or tested pursuant to paragraph D.2.b and D.2.c above;
  - (3) the factual findings with respect to the compliance of each Generating Unit with the requirements of the Consent Decree and Rule 403 of the PRRCAP; and
  - (4) an assessment of the accuracy of PREPA's reports and submissions made pursuant to Section V of the Consent Decree.

## PREPA'S PROCEDURES FOR ESTABLISHMENT OF OPTIMAL OPERATING RANGES

### Purpose:

To establish a procedure for determining the operational ranges necessary to ensure that a Generating Unit maintains compliance with Rule 403 of the PRRCAP.

### Application:

The operational ranges established with this test procedure may be used to detect any boiler equipment deterioration by observation of parameter deviations. The operational ranges set forth as a result of these procedures apply only to Generating Units operating in the range of 50% to 100% load and do not apply to Generating Units in start-up or shut-down.

### Definitions Applicable to the Optimization Program:

Parameter: a boiler operational value

Monitors: equipment used to determine a parameter value

Maximum/minimum level: Highest/lowest permissible level not to exceed 20% opacity.

Optimal range: the range established to operate the boiler of a Generating Unit at the best operational conditions for achieving optimal efficiency while maintaining compliance with rule 403 of the PRRCAP.

### Procedures:

1. Check calibration of the following monitors/instruments:
  - a. oxygen monitor;
  - b. average cold end temperature monitor;
  - c. fuel oil to steam differential pressure transmitter;
  - d. viscosity meter;
  - e. opacity meter; and
  - f. sootblower pressure transmitter or pressure detector.
2. The following procedure will be used to determine the oxygen operating ranges in order to not exceed 20% opacity:

- a. Opacity readings shall be made by a certified opacity reader in accordance with Test Method 9, 40 C.F.R. Part 60 Appendix A ("Method-9").
  - b. Adjust unit to desired load of 50%, 75%, or 100%.
  - c. Optimize all operating parameters beginning with an oxygen level that is based on prior testing and experience. Adjust parameters to obtain best unit operating conditions.
  - d. Use Table 1 to compile all operating parameters.
  - e. Decrease air flow. Do not exceed 20% black opacity as indicated by the opacity meter and/or the certified visible emissions reader.
  - f. Note and record the minimum oxygen level and other parameter values.
  - g. Increase air flow. Do not exceed 20% white opacity as determined by the certified visible emissions reader.
  - h. Note and record the maximum oxygen level and other parameter values.
3. Compile all data into Table 2 as Mode 1.
  4. Select an optimal oxygen value based on the results of steps 2.a through 2.h above. Vary the viscosity, steam to oil differential pressure, and average cold end temperature, while maintaining the selected oxygen level. Note and record the minimum and maximum points for viscosity, steam to oil differential pressure, and average cold end temperature. Adjust Generating Unit to optimal oxygen level and make individual variations on viscosity, steam to oil differential pressure, and average cold end temperature as determined using visible emissions readings and burner conditions.
  5. From a load range of 50% to 100%, adjust the Generating Unit to optimal operating conditions, as determined in Procedure Number 4, and perform optimization tests for the following modes:
    - a. Unit regulating frequency (mode 2); and
    - b. Boiler operating while sootblowing (mode 3).
  6. Perform the unit regulating frequency test, assuring that the maximum and minimum oxygen levels established in steps

- 2.a through 2.h above are met. Generate load changes in the order of 3% of nominal load (any load change greater than 3% is considered a load jump).
7. Compile all data into Table 2 as mode 2, load regulation results.
  8. Perform the boiler sootblowing test from 50% to 100% load ranges. Adjust the oxygen level as close as possible to the optimal oxygen level.
  9. Making sure to note the maximum opacity reading with certified reader, compile all data into Table 2 as mode 3, sootblowing results.
  10. Using the maximum and minimum values obtained during the fixed load tests and regulating frequency tests, determine the optimal operating ranges taking into consideration the control equipment responses and the best operating conditions for achieving optimal efficiency. Optimal operating ranges shall not exceed those ranges obtained as a result of steps 2.e and 2.g.
  11. Record all Generating Unit abnormal conditions that could alter the optimal operational ranges.
  12. These tests should be performed whenever an abnormal condition affects an optimal operating range and/or the visible emissions determined by the use of Method 9 or an opacity monitor indicate a potential problem.



## **APPENDIX B**

### **Quality Assurance Procedures for PREPA's Oxygen Monitors**

#### **1. Applicability and Principle**

1.1 Applicability. This Procedure is used to evaluate the effectiveness of quality control (QC) program and the quality of data produced by PREPA's oxygen monitors.

This procedure specifies the minimum QC requirements necessary for the control and assessment of the quality of PREPA's Oxygen Monitors data submitted to the Environmental Protection Agency (EPA).

Data collected as a result of QC measures required in this procedure are to be submitted to the Agency. These data are to be used by both the Agency and the PREPA's Oxygen monitor operators in assessing the effectiveness of PREPA's Oxygen Monitor QC procedure in the maintenance of acceptable Oxygen Monitor operation and valid emission data.

1.2 Principle. The QC procedure consists of two distinct and equally important functions. One function is the assessment of the quality of PREPA's Oxygen Monitor data by estimating accuracy. The other function is the control and improvement of the quality of PREPA's Oxygen Monitor data by implementing QC policies and corrective actions. These two functions form a control loop: When the assessment function indicates that the data quality is inadequate, the control effort must be increased until the data quality is acceptable. In order to provide uniformity in the assessment and reporting of data quality, this procedure explicitly specifies the assessment methods for response drift and accuracy.

Because the control and corrective action function encompasses a variety of policies, specifications, standards, and corrective measures, this procedure treats QC requirements in general terms to allow each source owner or operator to develop a QC system that is most effective and efficient for the circumstances.

#### **2. Definitions**

2.1 Oxygen Monitoring System (PREPA's Oxygen Monitor). The total equipment required for the determination of oxygen concentration.

2.3 Span Value. The upper limit of a gas concentration measurement range. Usually either 21 or 25% oxygen. Although, a narrower range should be used if necessary for boiler control.

2.4 Zero, Low-Level, and High-Level Values. PREPA's Oxygen Monitor response values related to the source specific span value. Determination of zero, low-level, and

high-level values is defined in the appropriate PREPA's procedures. (Procedure #1)

2.5 Calibration Drift (CD). The difference in PREPA's Oxygen Monitor output reading from a reference value after a period of operation during which no maintenance, repair or adjustment took place. The reference value may be supplied by a cylinder gas, gas cell, or optical filter and need not be certified.

### 3. QC Requirements

PREPA developed and implemented a QC program. As a minimum, the QC program include written procedures which described in detail, complete, step-by-step procedures and operations for each of the following activities:

1. Calibration of PREPA's Oxygen Monitors.
2. CD determination and adjustment of PREPA's Oxygen Monitors.
3. Preventive maintenance of PREPA's Oxygen Monitors (including spare parts inventory).
4. Data recording, calculations, and reporting.
5. Accuracy audit procedures.
6. Program of corrective action for malfunctioning Oxygen Monitors.

As described in Section 5.2, whenever excessive inaccuracies occur for two consecutive quarters, the source owner or operator must revise the current written procedures or modify or replace the Oxygen Monitor to correct the deficiency causing the excessive inaccuracies. These written procedures must be kept on record and available for inspection by the enforcement agency.

### 4. CD Assessment

4.1 CD Requirement. PREPA shall check the zero and span (50 to 100 percent of span value) calibration drifts at least once every two weeks in accordance with written procedure number 1. Whenever PREPA finds that the equipment has exceeded the allowable maximum drift ranges then calibration frequency must be increased to once a week. If the maximum allowable drift ranges are exceeded at this frequency, then the calibration frequency must be increased to once every three (3) days. If the maximum allowable drift ranges are exceeded at this frequency, then the calibration frequency must be increased to once every day. Whenever drift ranges are not exceeded during two consecutive calibration events, PREPA may return to the next less frequent calibration schedule. The zero and span shall, as a minimum, be adjusted whenever the zero drift or span drift exceeds 0.5% oxygen (e.g. zero drifts beyond 0.5% or span drifts from the 21% to less than 20.5 or greater than 21.5%). The system must allow the amount of zero and span drift measured at the every two weeks interval checks to be recorded and quantified, whenever specified.

4.2 Recording Requirement for Automatic CD Adjusting Monitors. Monitors that



automatically adjust the data to the corrected calibration values (e.g., microprocessor control) must be programmed to record the unadjusted concentration measured in the CD prior to resetting the calibration, if performed, or record the amount of adjustment.

4.3 Criteria for Excessive CD. If either the zero (or low-level) or span (high-level) CD result exceeds 0.5% for five consecutive checks, that Oxygen Monitor cell is out-of-control. If either the zero (or/low-level) or span (high-level) CD result exceeds 1% during any CD check, the Oxygen Monitor is out-of-control. If PREPA's Oxygen Monitor is out-of-control, the necessary corrective action must be taken. Following corrective action, the CD checks shall be repeated.

4.3.1 Out-Of-Control Period Definition. The beginning of the out-of-control period is the time corresponding to the completion of the fifth consecutive CD check with a CD in excess of the 0.5% oxygen limit, or the time corresponding to the completion of the, CD check preceding the biweekly CD check that results in a CD in excess of 1% oxygen. The end of the out-of-control period is the time corresponding to the completion of the CD check following corrective action that results in the CD's at both the zero (or low-level) and high-level measurement points being within the corresponding allowable CD limit of 0.5% oxygen.

4.3.2 PREPA's Oxygen Monitor Data Status During Out-of-Control Period. During the period if any of PREPA's Oxygen Monitors are out-of-control, that Oxygen Monitor's data may not be used in calculating emission compliance nor be counted towards meeting minimum data availability of 95% as required in the decree or its attachments.

4.4 Data Recording and Reporting. All measurements from PREPA's Oxygen Monitors must be retained on file as specified in the decree. However, emission data obtained on each successive day while any of PREPA's Oxygen Monitors are out-of-control may not be included as part of the minimum data requirement nor be used in the calculation of reported emissions for that period. Monitor downtime or availability will be measured in hours to the nearest hour.

## 5. Data Accuracy Assessment

5.1 Auditing Requirements. Each of PREPA's Oxygen Monitors must be audited at least once each calendar quarter. Successive quarterly audits shall occur no closer than 2 months. The audits shall be conducted as follows:

5.1.1 Cylinder Gas Audit (CGA). A CGA must be conducted each calendar quarters.

To conduct a CGA: (1) Challenge the Oxygen Monitor with an audit gas of known concentration at two points within the following ranges:



Audit Point	Audit Range
	O <sub>2</sub>
1.....	4 to 6% by volume
2.....	8 to 12% by volume

Challenge the Oxygen Monitor three times at each audit point, and use the average of the three responses in determining accuracy.

Use of separate audit gas cylinder for audit points 1 and 2. Do not dilute gas from audit cylinder when challenging the Oxygen Monitor.

The monitor should be challenged at each audit point for a sufficient period of time to assure adsorption-desorption of the Oxygen Monitor sample transport surfaces has stabilized.

(2) Operate each monitor in its normal sampling mode, i.e., pass the audit gas through all filters, scrubbers, conditioners, and other monitor components used during normal sampling, and as much of the sampling probe as is practical. At a minimum, the audit gas should be introduced at the connection between the probe and the sample line.

(3) Use audit gases that have been certified by comparison to National Bureau of Standards (NBS) gaseous Standard Reference Materials (SRM's) or NBS/EPA approved gas manufacturer's Certified Reference Materials (CRM's) following EPA Traceability Protocol No. 1. As an alternative to Protocol No. 1 audit gases, CRM's may be used directly as audit gases.

The difference between the actual concentration of the audit gas and the concentration indicated by the monitor is used to assess the accuracy of the Oxygen Monitor.

5.2 Excessive Audit Inaccuracy. If the CGA exceeds the criteria in section 5.2.3, the Oxygen Monitor is out-of-control. If the Oxygen Monitor is out-of-control, necessary corrective action must be taken to eliminate the problem. Following corrective action, the source owner or operator must audit the Oxygen Monitor with a CGA to determine if the Oxygen Monitor is operating within the specifications. If audit results show the Oxygen Monitor to be out-of-control, the Oxygen Monitor operator shall report both the audit showing the Oxygen Monitor to be out-of-control and the results of the audit following corrective action showing the Oxygen Monitor to be operating within specifications.

5.2.1 Out-Of-Control Period Definition. The beginning of the out-of-control period is the time corresponding to the completion of the sampling for the CGA. The end of the out-of-control period is the time corresponding to the completion of the sampling of the

subsequent successful audit.

5.2.2. Oxygen Monitor Data Status During Out-Of-Control Period. During the period the monitor is out-of-control, the Oxygen Monitor data may not be used in calculating emission compliance nor be counted towards meeting minimum data availability.

5.2.3. Criteria for Excessive Audit Inaccuracy. The criteria for excessive inaccuracy are:

- (1) For the CGA,  $\pm 15$  percent of the average audit value.

5.3 Criteria for Acceptable QC Procedure. Repeated excessive inaccuracies (i.e., out-of-control conditions resulting from the quarterly audits) indicates the QC procedures are inadequate or that the Oxygen Monitor is incapable of providing quality data. Therefore, whenever excessive inaccuracies occur for two consecutive quarters, the source owner or operator must revise the QC procedures (see Section 3) or modify or replace the Oxygen Monitor.

## 6. Calculations for Oxygen Monitor Data Accuracy

6.1 CGA Accuracy Calculation. Use Equation 1-1 to calculate the accuracy for the CGA, which is calculated in units of the appropriate concentration (e.g., percent O<sub>2</sub>). Each component of the Oxygen Monitor must meet the acceptable accuracy requirement.

$$A = \frac{C_m - C_a}{C_a} \times 100 \quad \text{Equation 1-1}$$

where:

A = Accuracy of the Oxygen Monitor, percent.

C<sub>m</sub> = Average Oxygen Monitor response during audit in percent.

C<sub>a</sub> = Average audit value (CGA certified value) in percent.

## 7. Reporting Requirements

At the reporting interval specified in the decree, quarterly report for each Oxygen Monitor the accuracy results from Section 6 and the CD assessment results from Section 4. Report the drift and accuracy information as a Data Assessment Report (DAR), and include one copy of this DAR for each CGA quarterly audit.

As a minimum, the DAR must contain the following information:

1. Source owner or operator name and address.

2. Identification and location of the Oxygen Monitor.
3. Manufacturer and model number of the Oxygen Monitor.
4. Assessment of Oxygen Monitor data accuracy and date of assessment as determined by a CGA described in Section 5 including the A for the CGA, the cylinder gases certified values, PREPA's Oxygen Monitor responses, and the calculations results as defined in Section 6. If the accuracy audit results show PREPA's Oxygen Monitor to be out-of-control, PREPA's Oxygen Monitor operator shall report both the audit results showing the Oxygen Monitor to be out-of-control and the results of the audit following corrective action showing the Oxygen Monitor to be operating within specifications.
5. Summary of all corrective actions taken when PREPA's Oxygen Monitor was determined out-of-control, as described in Sections 4 and 5.

Examples of DAR formats are shown in Figures 1 and 2.

## CALIBRATION DRIFT DATA SHEET

Source:	Date:
Monitor:	Location:
Serial No.:	Span:

	Week	Date	Time	Calibration Value	Monitor Response	Difference	Percent of Span <sup>2</sup>
Zero/ Low Level	1						
	3						
High Level	1						
	3						
Acceptance Criteria = 0.5% O <sub>2</sub>							

<sup>2</sup> Percent O<sub>2</sub> for oxygen monitors.

Figure 1

## CYLINDER GAS AUDIT DATA SHEET

Source:	Date:
Monitor:	Location:
Serial No.:	Scan:

Run Number	Calibration Value	Monitor Response	Difference		
			Zero/Low	Mid	High
1-Zero					
2-Mid					
3-High					
4-Mid					
5-Zero					
6-High					
7-Zero					
8-Mid					
9-High					
Mean Difference =					
Calibration Error =			%	%	%

Figure 2



## APPENDIX C

### **Quality Assurance Procedures for PREPA's Opacity Monitoring Systems**

#### **1. APPLICABILITY AND PRINCIPLE**

**1.1 Applicability.** This method applies to the measurement of the opacity of emissions from stationary sources by continuous opacity monitoring systems (COMS), in order to determine compliance with an emissions standard. The method is not applicable where water droplets are present in the effluent being measured.

**1.2 Principle.** The opacity of emissions from a stationary source is continuously measured and recorded using a COMS that meets all the requirements of Appendix D. Minimum quality control (QC) and quality assurance (QA) requirements are specified to assess the quality of COMS performance. Daily zero and span checks, quarterly performance audits, and annual zero alignment checks are required in order to assure the proper functioning of the COMS and the accuracy of the COMS data.

Because control and corrective action encompasses a variety of policies, specifications, standards, and corrective measures, this method treats QC requirements in general terms to allow the development of a QC system that is most effective and efficient for the circumstances.

#### **2. DEFINITIONS**

**2.1 Continuous Opacity Monitoring System (COMS).** The total equipment required for the determination of the opacity of emissions which meets the minimum requirements of Appendix D.

**2.2 Simulated Zero Check.** Method or device used to provide a simulated zero opacity (or low-level value between zero and 20 percent of the applicable opacity standard).

##### **2.3 Out-of-Control Periods.**

**2.3.1 Daily Assessments.** Whenever the calibration drift (CD) exceeds 4% PREPA will verify the calibration drift check. If the calibration drift is still beyond 4% the COMS is out-of-control. The beginning of the out-of-control period is the time corresponding to the last successful drift-check. The end of the out-of-control period is the time corresponding to the completion of appropriate adjustment and subsequent successful CD assessment.

**2.3.2 Quarterly and Annual Assessment.** Whenever a quarterly performance audit or annual zero alignment audit indicates unacceptable results, the COMS is "out-of-control." The beginning of the out-of-control period is the time corresponding to the completion of the performance audit indicating and unacceptable performance. The end of the out-of-control period is the time corresponding to the completion of appropriate corrective actions and subsequent successful audit (or, if applicable, partial audit).

**2.4 Upscale Opacity Condition.** Method or device used to provide a simulated upscale opacity (50 to 100 percent of the opacity standard).

#### **3. COMS INSTALLATION, DESIGN, AND PERFORMANCE SPECIFICATIONS**

In addition to the installation, design, and performance requirements of Appendix D, the following are added:

**3.1 External Calibration Filter Access.** The COMS must be designed to allow for the evaluation of both the linearity and accuracy relative to a simulated zero value and provide a check of all system components. An adequate design would accommodate a calibration filter assembly and permit periodic use of external (i.e., not intrinsic to the instrument) neutral density filters.

**3.2 Data Reduction/Recording.** The COMS shall be designed to allow for the data reduction, recording, and reporting in accordance with the applicable opacity standards. Monitors that automatically adjust the data to the corrected calibration value must be capable of recording the amount of adjustment that is applied to the exhaust gas stream measurement. The automatic adjustment feature of the monitors does not have to be used. Data recorded during periods of COMS breakdowns, repairs, calibration checks, and adjustments shall not be used in the data averages of Section 3.4.

**3.3 Zero and Upscale Calibration Evaluations.** All COMS installed pursuant to these procedures shall include a method for producing a simulated zero opacity condition and an upscale opacity condition using a certified neutral density filter to produce an known obscuration of light. Such procedures shall provide a system check of the analyzer internal optical surfaces and all active electronic circuitry including the lamp and photodetector assembly used in the measurement mode.

**3.4 Data Averages.** All COMS installed pursuant to these requirements shall complete a minimum of one cycle of sampling and analyzing for each successive 10-second period and one cycle of data recording for each specified data average, e.g., 6-minute average. An arithmetic or integrated average of all data should be used.

#### **4. OPACITY MEASUREMENT.**

**4.1** The opacity of emissions shall be continuously measured and recorded in units of percent opacity, and shall be expressed in the averaging period specified in the applicable regulation.

**4.2** The COMS shall be operated, maintained and calibrated to meet these requirements in accordance with the instructions provided by the instrument manufacturer.

**4.3** Except for COMS breakdowns, repairs, calibration checks, zero and span checks and other quality-assurance activities, the COMS shall be in continuous operation during all periods of source operation.

**4.4** A data average shall be considered valid if no less than 83 percent of the opacity readings upon which the data average is based are obtained.

**4.5** Any and all valid data averages may be used to determine compliance with the applicable opacity standard. Data obtained during "out-of-control" periods shall not be used for compliance determination; however, the data can be used for identifying periods of failure to meet quality assurance and control criteria.

#### **5. QUALITY CONTROL (QC) REQUIREMENTS**

**5.1 Calibration Drift (CD) Assessment.** The COMS shall be checked, at least once daily and the CD recorded at the zero (or low-level) and upscale-level opacity and reviewed by the operator. The COMS shall be adjusted whenever the CD exceeds 2%, and the COMS shall



be declared "out-of-control" when the CD exceeds 4%. Corrective actions, followed by a CD recheck are required when the COMS is out-of-control.

**5.2 Fault indicators Assessment.** At least daily, the fault lamp indicators, data acquisition system error messages, or other system self diagnostic indicators shall be checked. The appropriate corrective actions should be taken when the COMS is operating outside preset limits. All COMS data recorded during periods in which fault indicators are illuminated shall be considered invalid.

**5.3 Performance audits.** Checks of the individual COMS components and factors affecting the accuracy of the monitoring data, as described below, shall be conducted on a quarterly basis. The following identify the absolute minimum checks that shall be included in the performance audit:

**5.3.1 Optical Alignment Assessment.** The status of the optical alignment of the monitor components shall be checked and recorded according to the procedures specified by the monitor manufacturer. Realign as necessary.

**5.3.2 Optical Surface Dust Accumulation Assessment.** The apparent effluent opacity shall be compared and recorded before and after cleaning of each of the exposed optical surfaces. The total optical surface dust accumulation shall be determined by summing the apparent reductions in opacity for all of the optical surfaces that are cleaned. Caution should be employed in performing this check since fluctuations in effluent opacity occurring during the cleaning cycle may adversely affect the results.

**5.3.3 Zero Compensation Assessment.** The value of the zero compensation applied at the time of the audit shall be calculated as equivalent opacity, corrected to stack exit conditions as necessary, according to the procedures specified by the manufacturer. Record the compensation applied to the effluent recorded by the monitor system.

**5.3.4 Calibration Error Assessment.** A three-point calibration error test of the COMS shall be conducted. For either calibration error test methods below, three neutral density filters meeting the requirements of Appendix D, shall be placed in the COMS light beam path five consecutive times and the monitor responses shall be independently recorded from the permanent COMS data recorder. Additional guidance for conducting this test is included in Section 7.0 of Appendix D. The low-, mid-, and high-range calibration error results shall be computed as the mean difference and 95 percent confidence interval for the difference between the expected and actual responses of the monitor as corrected to stack exit conditions. These values shall be calculated using the procedures of Section 8.0 of Appendix D.

**5.3.4.1 Primary Calibration Error Method.** The calibration error test requires the installation of an external calibration audit device (zero-jig). The zero-jig shall be adjusted to provide the same zero response as the monitor's simulated zero.

**5.3.4.2 Attenuators.** Use calibration attenuators (i.e. neutral density filters) with values that have been determined according to Section 7.1.3 "Attenuator Calibration" of Appendix D, and produce simulated opacities (corrected to stack exit conditions as necessary) in the ranges listed in Table 1.

TABLE 1 - FILTER RANGES FOR COMS PERFORMANCE AUDITS

Audit Point	Audit Filter Range (% Op)
1	4 - 12 Percent Opacity (low)
2	16 - 24 Percent Opacity (mid)
3	30 - 40 Percent Opacity (high)

**5.3.4.3 Attenuator Stability.** The stability of the attenuator values should be checked at least once per year according to the procedures specified in Appendix D. The attenuators shall be recalibrated if the stability checks indicate a change of two percent opacity or greater.

#### **5.4 Annual Quality Control Assessment**

**5.4.1 Primary Zero Alignment Method.** The primary zero alignment shall be performed under clear path conditions. This may be accomplished if the process is not operating and the monitor pathlength is free of particulate matter or the monitor may be removed from its installation and set up under clear path conditions. The absence of particulate matter shall be demonstrated prior to conducting the test at the installed site. No adjustment to the monitor is allowed other than the establishment of the proper monitor pathlength and correct optical alignment of the monitor components. Record the monitor response to a clear path condition and to the monitor's simulated zero condition as percent opacity corrected to stack exit conditions as necessary. For monitors with automatic zero compensation, disconnect or disable the zero compensation mechanism or record the amount of correction applied to the monitor's simulated zero condition. The response difference in percent opacity to the clear path and simulated zero conditions shall be recorded as the zero alignment error. Adjust the monitor's simulated zero device to provide the same response as the clear path condition. Restore the COMS to its operating mode.

**5.4.2 Zero and Upscale Response Assessment.** The zero and upscale response errors shall be determined and recorded according to the CD procedures. The error is defined as the difference (in % opacity) between the correct value and the observed value for the zero and high-level calibration checks.

**5.4.3 Stack Exit Correlation Error Assessment.** The optical pathlength correction ratio (OPLR) shall be computed from the monitor pathlength and stack exit diameter and shall be compared, and the difference recorded, to the monitor setup value. The stack exit correlation error shall be determined as the absolute value of the difference between the measured value and the correct value, expressed as a percentage of the correct value.

#### **5.5 Monitor Acceptance Criteria.**

**5.5.1 Performance Assessment.** The following criteria are to be used for determining acceptable performance of and out-of-control periods for the COMS:

TABLE 2 - PERFORMANCE AUDIT CRITERIA

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Stack Exit Correlation Error:	$\leq 2$ percent
Fault Indicators:	Inactive - no error messages
Zero and Upscale Responses:	$\leq 2$ percent opacity
Zero Compensation:	$\leq 4$ percent opacity
Optical Alignment:	Misalignment error $\leq 2$ percent opacity
Optical Surface Dust Accumulation:	$\leq 4$ percent opacity
Calibration Error:	$\leq 2$ percent opacity
Zero Alignment	$\leq 5$ percent opacity for one check $\leq 2$ percent opacity for three consecutive checks
Valid Data Average Capture $\geq 95$ percent of source operating time	

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**5.5.2 Zero Alignment.** The zero alignment is acceptable if the error at the simulated zero check is less than 2 percent opacity prior to adjustment. The simulated zero check shall be adjusted to provide the correct response each time the zero alignment check is performed.

**5.5.3 Unacceptable Results - Single Performance Assessment.** The COMS is out-of-control whenever the results of a quarterly performance audit indicate non-compliance with any of the performance assessment criteria of TABLE 2 of §5.5.1 above. If the COMS is out-of-control, take necessary corrective action to eliminate the problem. Following corrective action, the source owner or operator must re-conduct the appropriate failed portion of the audit and other applicable portions to determine whether the COMS is operating properly and within specifications. The COMS owner or operator shall record both audit results showing the COMS to be out-of-control and the results following corrective action. COMS data obtained during any out-of-control period are may not be used for compliance determination or to meet the data capture requirement of §5.5.6, however the data can be used for identifying periods where there has been a failure to meet quality assurance and control criteria.

**5.5.4 Unacceptable Results - Multiple Performance Assessments.** Repeated audit failures (i.e., out-of-control conditions resulting from the quarterly audits) indicate that the QC procedures are inadequate or the COMS is incapable of providing quality data. The source owner or operator shall increase the frequency of the above QC procedures until the performance criteria is maintained or modify or replace the COMS whenever two consecutive quarters of unacceptable performance occurs.

**5.5.5 Unacceptable Zero Alignment.** If the error of the simulated zero check prior to adjustment exceeds 5 percent opacity for any zero check, or exceeds the 2 percent opacity acceptance criterion for three consecutive checks, the performance of the COMS is unacceptable. The source owner or operator shall take corrective action to resolve the problem and improve the stability of the simulated zero check method or device or replace the COMS. If the COMS is not replaced, zero alignment audits shall be conducted at least biannually during non-consecutive quarters.

**5.5.6 Unacceptable Results- Insufficient Data Capture.** Compliance with the 95 percent data capture requirement shall be determined by considering COMS downtime for all causes (e.g., monitor malfunctions, data system failures, preventive maintenance, unknown causes,

etc.) except for downtime associated with routine zero and span checks and QA/QC activities required by this method. Failure of a COMS to obtain valid opacity data for at least 95 percent of the source operating time during any reporting period (e.g., day, month, quarter, semiannual period, etc.) indicates that the QC/QA procedures are not sufficient or that the COMS is not capable of continuously providing quality data. Whenever less than 95 percent valid data are obtained for a reporting period, the source owner or operator shall either: (1) perform such additional QC/QA activities as deemed necessary to assure acceptable data capture; or (2) modify or replace the COMS. Additional QC/QA procedures include, but are not limited to, implementation or revision of a QC program; maintenance of a spare-parts inventory; conducting more frequent system performance audits.

## **6. CALCULATIONS FOR COMS ASSESSMENTS.**

**6.1 Performance Audit Calculations.** The calculations contained in Section 8 of Appendix D shall be followed.

**6.2 Zero Alignment Checks.** The standard procedures for Zero Alignment Checks shall be followed.



## **APPENDIX D**

### **SPECIFICATIONS AND TEST PROCEDURES FOR OPACITY CONTINUOUS EMISSION MONITORING SYSTEMS IN STATIONARY SOURCES**

#### ***1. Applicability and Principle***

1.1 Applicability. This specification contains requirements for the design, performance, and installation of instruments for opacity continuous emission monitoring systems (CEMS's) and data computation procedures for evaluating the acceptability of a CEMS. Certain design requirements and test procedures established in this specification may not apply to all instrument designs. In such instances, equivalent design requirements and test procedures may be used with prior approval of the Administrator.

1.2 Principle. The opacity of particulate matter in stack emissions is continuously monitored by a measurement system based upon the principle of transmissometry. Light having specific spectral characteristics is projected from a lamp through the effluent in the stack or duct, and the intensity of the projected light is measured by a sensor. The projected light is attenuated because of absorption and scattered by the particulate matter in the effluent; the percentage of visible light attenuated is defined as the opacity of the emission. Transparent stack emissions that do not attenuate light will have a transmittance of 100 percent or an opacity of zero percent. Opaque stack emissions that attenuate all of the visible light will have a transmittance of zero percent or an opacity of 100 percent.

This specification establishes specific design criteria for the transmissometer system. Any opacity CEMS that is expected to meet this specification is first checked to verify that the design specifications are met. Then, the opacity CEMS is calibrated, installed, and operated for a specified length of time. During this specified time period, the system is evaluated to determine conformance with the established performance specifications.

#### ***2. Definitions***

2.1 Continuous Emission Monitoring System. The total equipment required for the determination of opacity. The system consists of the following major subsystems:

2.1.1 Sample Interface. That portion of CEMS that protects the analyzer from the effects of the stack effluent and aids in keeping the optical surfaces clean.

2.1.2 Analyzer. That portion of the CEMS that senses the pollutant and generates an output that is a function of the opacity.

2.1.3 Data Recorder. That portion of the CEMS that provides a permanent record of the analyzer output in terms of opacity. The data recorder may include automatic data-reduction capabilities.

2.2 Transmissometer. That portion of the CEMS that includes the sample interface and the analyzer.

2.3 Transmittance. The fraction of incident light that is transmitted through an optical medium.



2.4 Opacity. The fraction of incident light that is attenuated by an optical medium. Opacity (Op) and transmittance (Tr) are related by:  $Op=1-Tr$ .

2.5 Optical Density. A logarithmic measure of the amount of incident light attenuated. Optical density (D) is related to the transmittance and opacity as follows:

$$D=-\log_{10} Tr=-\log_{10} (1-Op).$$

2.6 Peak Spectral Response. The wavelength of maximum sensitivity of the transmissometer.

2.7 Mean Spectral Response. The wavelength that is the arithmetic mean value of the wavelength distribution for the effective spectral response curve of the transmissometer.

2.8 Angle of View. The angle that contains all of the radiation detected by the photodetector assembly of the analyzer at a level greater than 2.5 percent of the peak detector response.

2.9 Angle of Projection. The angle that contains all of the radiation projected from the lamp assembly of the analyzer at a level of greater than 2.5 percent of the peak illuminance.

2.10 Span Value. The opacity value at which the CEMS is set to produce the maximum data display output as specified in the applicable subpart.

2.11 Upscale Calibration Value. The opacity value at which a calibration check of the CEMS is performed by simulating an upscale opacity condition as viewed by the receiver.

2.12 Calibration Error. The difference between the opacity values indicated by the CEMS and the known values of a series of calibration attenuators (filters or screens).

2.13 Zero Drift. The difference in the CEMS output readings from the zero calibration value after a stated period of normal continuous operation during which no unscheduled maintenance, repair, or adjustment took place. A calibration value of 10 percent opacity or less may be used in place of the zero calibration value.

2.14 Calibration Drift. The difference in the CEMS output readings from the upscale calibration value after a stated period of normal continuous operation during which no unscheduled maintenance, repair, or adjustment took place.

2.15 Response Time. The amount of time it takes the CEMS to display on the data recorder 95 percent of a step change in opacity.

2.16 Conditioning Period. A period of time (168 hours minimum) during which the CEMS is operated without any unscheduled maintenance, repair, or adjustment prior to initiation of the operational test period.

2.17 Operational Test Period. A period of time (168 hours) during which the CEMS is expected to operate within the established performance specifications without any unscheduled maintenance, repair, or adjustment.

2.18 Path Length. The depth of effluent in the light beam between the receiver and the transmitter of a single-pass transmissometer, or the depth of effluent between the transceiver and reflector of a double-pass transmissometer. Two path lengths are referenced by this specification as follows:

2.18.1 Monitor Path Length. The path length (depth of effluent) at the installed location of the CEMS.

2.18.2 Emission Outlet Path Length. The path length (depth of effluent) at the location where emissions are released to the atmosphere. For noncircular outlets,  $De=(2LW)\div(L+W)$ , where L is the length of the outlet and W is the width of the outlet. Note that this definition does not apply to pressure baghouse outlets with multiple stacks, side discharge vents, ridge roof monitors, etc.

### 3. Apparatus

3.1 Opacity Continuous Emission Monitoring System. Any opacity CEMS that is expected to meet the design and performance specifications in Section 5 and a suitable data recorder, such as an analog strip chart recorder or other suitable device (e.g., digital computer) with an input signal range compatible with the analyzer output.

3.2 Calibration Attenuators. Minimum of three. These attenuators must be optical filters or screens with neutral spectral characteristics selected and calibrated according to the procedures in Sections 7.1.2 and 7.1.3, and of sufficient size to attenuate the entire light beam received by the detector of the transmissometer.

3.3 Upscale Calibration Value Attenuator. An optical filter with neutral spectral characteristics, a screen, or other device that produces an opacity value (corrected for path length, if necessary) that is greater than or equal to the applicable opacity standard but less than or equal to one-half the applicable instrument span value.

3.4 Calibration Spectrophotometer. A laboratory spectrophotometer meeting the following minimum design specifications:

PARAMETER	SPECIFICATION
Wavelength range	300-800 nm
Detector angle of view	<10°
Accuracy	<0.5% transmittance, NIST traceable calibration

### 4. Installation Specifications

Install the CEMS at a location where the opacity measurements are representative of the total emissions from the affected facility. These requirements can be met as follows:

4.1 Measurement Location. Select a measurement location that is (a) downstream from all particulate control equipment, (b) where condensed water vapor is not present, (c) free of interference from ambient light (applicable only if transmissometer is responsive to ambient light), and (d) accessible in order to permit routine maintenance. Accessibility is an important criterion because easy access for lens cleaning, alignment checks, calibration checks, and blower maintenance will help assure quality data.

4.2 Measurement Path. The primary concern in locating a transmissometer is determining a location of well-mixed stack gas. Two factors contribute to complete mixing of emission gases: turbulence and sufficient mixing time. The criteria listed below define conditions under which well-mixed emissions can be expected.

Select a measurement path that passes through a centroidal area equal to 25 percent of the cross section. Additional requirements or modifications must be met for certain locations as follows:

4.2.1 If the location is in a straight vertical section of stack or duct and is less than 4 equivalent



diameters downstream from a bend, use a path that is in the plane defined by the upstream bend (see Figure 1-1).

4.2.2 If the location is in a straight vertical section of stack or duct and is less than 4 equivalent diameters upstream from a bend, use a path that is in the plane defined by the bend (see Figure 1-2).

4.2.3 If the location is in a straight vertical section of stack or duct and is less than 4 diameters downstream and is also less than 1 diameter upstream from a bend, use a path in the plane defined by the upstream bend (see Figure 1-3).

4.2.4 If the location is in a horizontal section of duct and is at least 4 diameters downstream from a vertical bend, use a path in the horizontal plane that is between one-third and one-half the distance up the vertical axis from the bottom of the duct (see Figure 1-4).

4.2.5 If the location is in a horizontal section of duct and is less than 4 diameters downstream from a vertical bend, use a path in the horizontal plane that is between one-half and two-thirds the distance up the vertical axis from the bottom of the duct for upward flow in the vertical section, and is between one-third and one-half the distance up the vertical axis from the bottom of the duct for downward flow (Figure 1-5).

4.3 *Alternative Locations and Measurement Paths.* Other locations and measurement paths may be selected by demonstrating to the Administrator that the average opacity measured at the alternative location or path is equivalent to the opacity as measured at a location meeting the criteria of Sections 4.1 and 4.2. The opacity at the alternative location is considered equivalent if the average value measured at the alternative location is within the range defined by the average measured opacity  $\pm 10$  percent at the location meeting the installation criteria in Section 4.2, or if the difference between the two average opacity values is less than 2 percent opacity. To conduct this demonstration, measure the opacities at the two locations or paths for a minimum period of 2 hours and compare the results. The opacities of the two locations or paths may be measured at different times, but must be measured at the same process operating conditions. Alternative procedures for determining acceptable locations may be used if approved by the Administrator.

## *5. Design and Performance Specifications*

5.1 *Design Specifications.* The CEMS for opacity shall comply with the following design specifications:

5.1.1 *Peak and Mean Spectral Responses.* The peak and mean spectral responses must occur between 500 nm and 600 nm. The response at any wavelength below 400 nm or above 700 nm shall be less than 10 percent of the peak spectral response.

5.1.2 *Angle of View.* The total angle of view shall be no greater than 5 degrees.

5.1.3 *Angle of Projection.* The total angle of projection shall be no greater than 5 degrees.

5.1.4 *Optical Alignment Sight.* Each analyzer must provide some method for visually determining that the instrument is optically aligned. The method provided must be capable of indicating that the unit is misaligned when an error of +2 percent opacity occurs due to misalignment at a monitor path length of 8 meters. Instruments that are capable of providing an absolute zero check while in operation on a stack or duct with effluent present, and while maintaining the same optical alignment during measurement and calibration, need not meet this

requirement (e.g., some "zero pipe" units).

5.1.5 Simulated Zero and Upscale Calibration System. Each analyzer must include a calibration system for simulating a zero (or no greater than 10 percent) opacity and an upscale opacity value for the purpose of performing periodic checks of the transmissometer calibration while on an operating stack or duct. This calibration system will provide, as a minimum, a system check of the analyzer internal optics and all electronic circuitry including the lamp and photodetector assembly.

5.1.6 Access to External Optics. Each analyzer must provide a means of access to the optical surfaces exposed to the effluent stream in order to permit the surfaces to be cleaned without requiring removal of the unit from the source mounting or without requiring optical realignment of the unit.

5.1.7 Automatic Zero Compensation Indicator. If the CEMS has a feature that provides automatic zero compensation for dirt accumulation on exposed optical surfaces, the system must also provide some means of indicating when a compensation of 4 percent opacity has been exceeded. This indicator shall be at a location accessible to the operator (e.g., the data output terminal). During the operational test period, the system must provide some means (manual or automated) for determining the actual amount of zero compensation at the specified 24-hour intervals so that the actual 24-hour zero drift can be determined (see Section 7.4.1).

5.1.8 Slotted Tube. For transmissometers that use slotted tubes, the length of the slotted portion(s) must be equal to or greater than 90 percent of the effluent path length (distance between duct or stack walls). The slotted tube must be of sufficient size and orientation so as not to interfere with the free flow of effluent through the entire optical volume of the transmissometer photodetector. The manufacturer must also show that the transmissometer minimizes light reflections. As a minimum, this demonstration shall consist of laboratory operation of the transmissometer both with and without the slotted tube in position.

Should the operator desire to use a slotted tube design with a slotted portion equal to or less than 90 percent of the monitor path length, the operator must demonstrate to the Administrator that acceptable results can be obtained. As a minimum demonstration, the effluent opacity shall be measured using both the slotted tube instrument and another instrument meeting the requirement of this specification but not of the slotted tube design. The measurements must be made at the same location and at the same process operating conditions for a minimum period of 2 hours with each instrument. The shorter slotted tube may be used if the average opacity measured is equivalent to the opacity measured by the non-slotted tube design. The average opacity measured is equivalent if it is within the opacity range defined by the average opacity value  $\pm 10$  percent measured by the non-slotted tube design, or if the difference between the average opacities is less than 2 percent opacity.

5.1.9 External Calibration Filter Access (optional) Provisions in the design of the transmissometer to accommodate an external calibration filter assembly are recommended. An adequate design would permit occasional use of external (i.e., not intrinsic to the instrument) neutral density filters to assess monitor operation.

5.2 Performance Specifications. The opacity CEMS specifications are listed in Table 1-1.

## *6. Design Specifications Verification Procedure*

These procedures will not apply to all instrument designs and will require modification in some cases; all procedural modifications are subject to the approval of the Administrator.

Test each analyzer for conformance with the design specifications of Sections 5.1.1-5.1.4, or obtain a certificate of conformance from the analyzer manufacturer as follows:

6.1 Spectral Response. Obtain detector response, lamp emissivity, and filter transmittance data for the components used in the measurement system from their respective manufacturers, and develop the effective spectral response curve of the transmissometer. Then determine and report the peak spectral response wavelength, the mean spectral response wavelength, and the maximum response at any wavelength below 400 nm and above 700 nm expressed as a percentage of the peak response.

Alternatively, conduct a laboratory measurement of the instrument's spectral response curve. The procedures of this laboratory evaluation are subject to approval of the Administrator.

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**TABLE 1-1. PERFORMANCE SPECIFICATIONS**

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PARAMETER	SPECIFICATIONS
1. Calibration error <sup>a</sup>	≤3 percent opacity
2. Response time	≤10 seconds
3. Conditioning period <sup>b</sup>	168 hours
4. Operational test period <sup>b</sup>	168 hours
5. Zero drift (24-hour) <sup>a</sup>	≤2 percent opacity
6. Calibration drift (24-hour)	≤2 percent opacity
7. Data Recorder Resolution	≤0.5 percent opacity

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<sup>a</sup> Expressed as the sum of the absolute value of the mean and the absolute value of the confidence coefficient.

<sup>b</sup> During the operational test period, the COMS must not require any corrective maintenance, repair, replacement, or adjustment other than that clearly specified as routine and required in the operation and maintenance manuals.

6.2 Angle of View. Set up the receiver as specified by the manufacturer's written instructions. Draw an arc with radius of 3 meters in the horizontal direction. Using a small (less than 3 centimeters) nondirectional light source, measure the receiver response at 5-centimeter intervals on the arc for 30 centimeters on either side of the detector centerline. Repeat the test in the vertical direction. Then for both the horizontal and vertical directions, calculate the response of the receiver as a function of viewing angle (26 centimeters of arc with a radius of 3 meters equals 5 degrees), report relative angle of view curves, and determine and report the angle of view.

6.3 Angle of Projection. Set up the projector as specified by the manufacturer's written instructions. Draw an arc with a radius of 3 meters in the horizontal direction. Using a small (less than 3 centimeters) photoelectric light detector, measure the light intensity at 5-centimeter intervals on the arc for 30 centimeters on either side of the light source centerline of projection.

Repeat the test in the vertical direction. Then for both the horizontal and vertical directions, calculate the response of the photoelectric detector as a function of the projection angle (26 centimeters of arc with a radius of 3 meters equals 5 degrees), report the relative angle of projection curves, and determine and report the angle of projection.

6.4 Optical Alignment Sight. In the laboratory set the instrument up as specified by the manufacturer's written instructions for a monitor path length of 8 meters. Align, zero, and span the instrument. Insert an attenuator of 10 percent (nominal opacity) into the instrument path length. Slowly misalign the projector unit by rotating it until a positive or negative shift of 2 percent opacity is obtained by the data recorder. Then, following the manufacturer's written instructions, check the alignment. The alignment procedure must indicate that the instrument is misaligned. Repeat this test for lateral misalignment of the projector. Realign the instrument and follow the same procedure for checking misalignment of the receiver or retroreflector unit (lateral misalignment only).

6.5 Manufacturer's Certificate of Conformance (alternative to above). Obtain from the manufacturer a certificate of conformance stating that the first analyzer randomly sampled from each month's production was tested according to Sections 6.1 through 6.4 and satisfactorily met all requirements of Section 5 of this specification. If any of the requirements were not met, the certificate must state that the entire month's analyzer production was resampled according to the military standard 105D sampling procedure (MIL-STD-105D) inspection level II; was retested for each of the applicable requirements under Section 5 of this specification; and was determined to be acceptable under MIL-STD-105D procedures, acceptable quality level 1.0. The certificate of conformance must include the results of each test performed for the analyzer(s) sampled during the month the analyzer being installed was produced.

## *7. Performance Specification Verification Procedure*

Test each CEMS that conforms to the design specifications (Section 5.1) using the following procedures to determine conformance with the specifications of Table 1-1. These tests are to be performed using the data recording system to be employed during monitoring. Prior approval from the Administrator is required if different data recording systems are used during the performance test and monitoring.

7.1 Preliminary Adjustments and Tests. Before installing the system on the stack, perform these steps or tests at the affected facility or in the manufacturer's laboratory.

7.1.1 Equipment Preparation. Set up and calibrate the CEMS for the monitor path length to be used in the installation as specified by the manufacturer's written instructions. For this specification, the mounting distance between the transmitter and receiver/reflector unit at the source must be measured prior to performing the calibrations (do not use distances from engineering drawings). If the CEMS has automatic path length adjustment, follow the manufacturer's instructions to adjust the signal output from the analyzer in order to yield results based on the emission outlet path length. Set the instrument and data recording system ranges so that maximum instrument output is within the span range specified in the applicable subpart.

Align the instrument so that maximum system response is obtained during a zero (or upscale) check performed across the simulated monitor path length. As part of this alignment, include



rotating the reflector unit (detector unit for single pass instruments) on its axis until the point of maximum instrument response is obtained.

Follow the manufacturer's instructions to zero and span the instrument. Perform the zero alignment adjustment by balancing the response of the CEMS so that the simulated zero check coincides with the actual zero check performed across the simulated monitor path length. At this time, measure and record the indicated upscale calibration value. The calibration value reading must be within the required opacity range (Section 3.3).

**7.1.2 Calibration Attenuator Selection.** Based on the span value specified in the applicable subpart, select a minimum of three calibration attenuators (low, mid, and high range) using Table 1-2.

If the system is operating with automatic path length compensation, calculate the attenuator values required to obtain a system response equivalent to the applicable values shown in Table 1-2; use Equation 1-1 for the conversion. A series of filters with nominal optical density (opacity) values of 0.1(20), 0.2(37), 0.3(50), 0.4(60), 0.5(68), 0.6(75), 0.7(80), 0.8(84), 0.9(88), and 1.0(90) are commercially available. Within this limitation of filter availability, select the calibration attenuators having the values given in Table 1-2 or having values closest to those calculated by Equation 1-1.

$$D1=D2 (L1/L2)$$

Eq. 1-1

**Table 1-2-Required Calibration Attenuator Values (Nominal)**

Span value (percent opacity)	Calibrated attenuator optical density (equivalent opacity in parenthesis)-		
	D2		
	Low-range	Mid-range	High-range
40	0.05 (11)	0.1 (20)	0.2 (37)
50	0.1 (20)	0.2 (37)	0.3 (50)
60	0.1 (20)	0.2 (37)	0.3 (50)
70	0.1 (20)	0.3 (50)	0.4 (60)
80	0.1 (20)	0.3 (50)	0.6 (75)
90	0.1 (20)	0.4 (60)	0.7 (80)
100	0.1 (20)	0.4 (60)	0.9 (87.5)

Where:

D1=Nominal optical density value of required mid, low, or high range calibration attenuators.

D2=Desired attenuator optical density output value from Table 1-2 at the span required by the applicable subpart.

L1=Monitor path length.

L2=Emission outlet path length.

7.1.3 Attenuator Calibration. Select a laboratory calibration spectrophotometer meeting the specifications of Section 3.4. Using this calibration spectrophotometer, calibrate the required filters or screens. Make measurements at wavelength intervals of 20 nm or less. As an alternative procedure, use the calibration spectrophotometer to measure the C.I.E. DaylightC luminous transmittance of the attenuators. Check the attenuators several times, at different locations on the attenuator.

The attenuator manufacturer must specify the period of time over which the attenuator values can be considered stable, as well as any special handling and storing procedures required to enhance attenuator stability. To assure stability, recheck attenuator values at intervals less than or equal to the period stability guaranteed by the manufacturer. Recheck at least every 3 months. If desired, perform the stability checks with an instrument (secondary) other than the calibration spectrophotometer. This secondary instrument must be a high-quality laboratory transmissometer or spectrophotometer, and the same instrument must always be used for the stability checks. If a secondary instrument is to be used for stability checks, the value of the calibrated attenuator must be measured on this secondary instrument immediately following initial calibration. If over a period of time an attenuator value changes by more than  $\pm 2$  percent opacity, recalibrate the attenuator on the calibration spectrophotometer or replace it with a new attenuator.

If this procedure is conducted by the filter or screen manufacturer or by an independent laboratory, obtain a statement certifying the values and certifying that the specified procedure, or equivalent, is used.

7.1.4 Calibration Error Test. Insert the calibration attenuators (low, mid, and high range) in the transmissometer path at or as near the midpoint of the path as feasible. Place the attenuator in the measurement path at a point where the effluent will be measured; i.e., do not place the calibration attenuator in the instrument housing. If the instrument manufacturer recommends a procedure wherein the attenuators are placed in the instrument housing, the manufacturer must provide data showing this alternative procedure is acceptable. While inserting the attenuator, assure that the entire beam received by the detector will pass through the attenuator and that the attenuator is inserted in a manner which minimizes interference from reflected light. Make a total of five nonconsecutive readings for each filter. Record the monitoring system output readings in percent opacity (see example Figure 1-6). Then, if the path length is not adjusted by the measurement system, subtract the actual calibration attenuator value from the value indicated by the measurement system recorder for each of the 15 readings obtained. If the path length is adjusted by the measurement system, subtract the "path adjusted" calibration attenuator values from the values indicated by the measurement system recorder (the "path adjusted" calibration attenuator values are calculated using Equation 1-6 or 1-7). Calculate the arithmetic mean difference, standard deviation, and confidence coefficient of the five tests at each attenuator value using Equations 1-3, 1-4, and 1-5 (Sections 8.1-8.3). Calculate the sum of the absolute value of the mean difference and the absolute value of the confidence coefficient for each of the three test attenuators; report these three values as the calibration error.

7.1.5 System Response Test. Insert the high-range calibration attenuator in the transmissometer path five times, and record the time required for the system to respond to 95 percent of final zero and high-range filter values (see example Figure 1-7). Then calculate the mean time of the 10

upscale and downscale tests and report this value as the system response time.

7.2 Preliminary Field Adjustments. Install the CEMS on the affected facility according to the manufacturer's written instructions and the specifications in Section 4, and perform the following preliminary adjustments:

7.2.1 Optical and Zero Alignment. When the facility is not in operation, optically align the light beam of the transmissometer upon the optical surface located across the duct or stack (i.e., the retroreflector or photodetector, as applicable) in accordance with the manufacturer's instructions; verify the alignment with the optical alignment sight. Under clear stack conditions, verify the zero alignment (performed in Section 7.1.1) by assuring that the monitoring system response for the simulated zero check coincides with the actual zero measured by the transmissometer across the clear stack. Adjust the zero alignment, if necessary. Then, after the affected facility has been started up and the effluent stream reaches normal operating temperature, recheck the optical alignment. If the optical alignment has shifted, realign the optics. Note: Careful consideration should be given to whether a "clear stack" condition exists. It is suggested that the stack be monitored and the data output (instantaneous real-time basis) be examined to determine whether fluctuations from zero opacity are occurring before a clear stack condition is assumed to exist.

7.2.2 Optical and Zero Alignment (Alternative Procedure). The procedure given in 7.2.1 is the preferred procedure and should be used whenever possible; however, if the facility is operating and a zero stack condition cannot practicably be obtained, use the zero alignment obtained during the preliminary adjustments (Section 7.1.1) before installing the transmissometer on the stack. After completing all the preliminary adjustments and tests required in Section 7.1, install the system at the source and align the optics, i.e., align the light beam from the transmissometer upon the optical surface located across the duct or stack in accordance with the manufacturer's instruction. Verify the alignment with the optical alignment sight. The zero alignment conducted in this manner must be verified and adjusted, if necessary, the first time a clear stack condition is obtained after the operation test period has been completed.

7.3 Conditioning Period. After completing the preliminary field adjustments (Section 7.2), operate the CEMS according to the manufacturer's instructions for an initial conditioning period of not less than 168 hours while the source is operating. Except during times of instrument zero and upscale calibration checks, the CEMS must analyze the effluent gas for opacity and produce a permanent record of the CEMS output. During this conditioning period there must be no unscheduled maintenance, repair, or adjustment. Conduct daily zero calibration and upscale calibration checks; and, when accumulated drift exceeds the daily operating limits, make adjustments and clean the exposed optical surfaces. The data recorder must reflect these checks and adjustments. At the end of the operational test period, verify that the instrument optical alignment is correct. If the conditioning period is interrupted because of source breakdown (record the dates and times of process shutdown), continue the 168-hour period following resumption of source operation. If the conditioning period is interrupted because of monitor failure, restart the 168-hour conditioning period when the monitor becomes operational.

7.4 Operational Test Period. After completing the conditioning period, operate the system for an additional 168-hour period. The 168-hour operational test period need not follow immediately after the 168-hour conditioning period. Except during times of instrument zero and upscale calibration checks, the CEMS must analyze the effluent gas for opacity and must produce a

permanent record of the CEMS output. During this period, there will be no unscheduled maintenance, repair, or adjustment. Zero and calibration adjustments, optical surface cleaning, and optical realignment may be performed (optional) only at 24-hour intervals or at such shorter intervals as the manufacturer's written instructions specify. Automatic zero and calibration adjustments made by the CEMS without operator intervention or initiation are allowable at any time. During the operational test period, record all adjustments, realignments, and lens cleanings. If the operational test period is interrupted because of source breakdown, continue the 168-hour period following resumption of source operation. If the test period is interrupted because of monitor failure, restart the 168-hour period when the monitor becomes operational. During the operational test period, perform the following test procedures:

7.4.1. Zero Drift Test. At the outset of the 168-hour operational test period, record the initial simulated zero (or no greater than 10 percent) and upscale opacity readings (see example Figure 1-8). After each 24-hour interval, check and record the final zero reading before any optional or required cleaning and adjustment. Zero and upscale calibration adjustments, optical surface cleaning, and optical realignment may be performed only at 24-hour intervals (or at such shorter intervals as the manufacturer's written instructions specify), but are optional. However, adjustments and cleaning must be performed when the accumulated zero calibration or upscale calibration drift exceeds the 24-hour drift specification ( $\pm 2$  percent opacity). If no adjustments are made after the zero check, record the final zero reading as the initial zero reading for the next 24-hour period. If adjustments are made, record the zero value after adjustment as the initial zero value for the next 24-hour period. If the instrument has an automatic zero compensation feature for dirt accumulation on exposed lenses and the zero value cannot be measured before compensation is entered, then record the amount of automatic zero compensation (as opacity) for the final zero reading of each 24-hour period. (List the indicated zero values of the CEMS in parenthesis.) From the initial and final zero readings, calculate the zero drift for each 24-hour period. Then calculate the arithmetic mean, standard deviation, and confidence coefficient of the 24-hour zero drift and the 95 percent confidence interval using Equations 1-3, 1-4, and 1-5. Calculate the sum of the absolute value of the mean and the absolute value of the confidence coefficient, and report this value as the 24-hour zero drift.

7.4.2 Upscale Drift Test. At each 24-hour interval, after the zero calibration value has been checked and any optional or required adjustments have been made, check and record the simulated upscale calibration value. If no further adjustments are made to the calibration system at this time, record the final upscale calibration value as the initial upscale value for the next 24-hour period. If an instrument span adjustment is made, record the upscale value after adjustment as the initial upscale value for the next 24-hour period. From the initial and final upscale readings, calculate the upscale calibration drift for each 24-hour period. Then calculate the arithmetic mean, standard deviation, and confidence coefficient of the 24-hour calibration drift and the 95 percent confidence interval using Equations 1-3, 1-4, and 1-5. Calculate the sum of the absolute value of the mean and the absolute value of the confidence coefficient, and report this value as the 24-hour calibration drift.

## 8. Equations



8.1 Arithmetic Mean. Calculate the mean of a set of data as follows:

where:

$$\bar{x} = \frac{1}{n} \sum_{i=1}^n x_i \quad \text{Eq. 1-3}$$

$n$  = Number of data points.

$n$

$\sum_{i=1}^n x_i$  = Algebraic sum of the individual measurements,  $x_i$ .

8.2 Standard Deviation. Calculate the standard deviation  $S_d$  as follows:

$$S_d = \sqrt{\frac{\sum_{i=1}^n x_i^2 - \frac{\left(\sum_{i=1}^n x_i\right)^2}{n}}{n - 1}} \quad \text{Eq. 1-4}$$

8.3 Confidence Coefficient. Calculate the 2.5 percent error confidence coefficient (one-tailed), CC, as follows:

where:  $CC = \frac{t_{0.975} S_d}{\sqrt{n}}$  Eq. 1-5

$t_{0.975}$  = t-value (see table 1-5)

8.4 Error. Calculate the error (i.e., calibration error, zero drift, and CD), Er, as follows:

$$Er = |\bar{x}| + |CC| \quad \text{Eq. 1-6}$$

TABLE 1-5. t-VALUES

n <sup>a</sup>	t <sub>0.975</sub>	n <sup>a</sup>	t <sub>0.975</sub>	n <sup>a</sup>	t <sub>0.975</sub>
2	12.706	7	2.447	12	2.201
3	4.303	8	2.365	13	2.179
4	3.182	9	2.306	14	2.160
5	2.776	10	2.262	15	2.145
6	2.571	11	2.228	16	2.131

<sup>a</sup>The values in this table are already corrected for n-1 degrees of freedom. Use n equal to the number of individual values.

8.5 Conversion of Opacity Values for Monitor Pathlength to Emission Outlet Pathlength. When the monitor pathlength is different from the emission outlet pathlength, use either of the following equations to convert from one basis to the other (this conversion may be automatically calculated by the monitoring system):

$$\log (1-Op_2) = \frac{L_2}{L_1} \log (1 - Op_1) \quad \text{Eq. 1-7}$$

$$D_2 = \frac{L_2}{L_1} \times D_1 \quad \text{Eq. 1-8}$$

where:

- Op<sub>1</sub> = Opacity of the effluent based upon L<sub>1</sub>.
- Op<sub>2</sub> = Opacity of the effluent based upon L<sub>2</sub>.
- L<sub>1</sub> = Monitor pathlength.
- L<sub>2</sub> = Emission outlet pathlength.
- D<sub>1</sub> = Optical density of the effluent based upon L<sub>1</sub>.
- D<sub>2</sub> = Optical density of the effluent based upon L<sub>2</sub>.

## 9. Reporting

Report the following (summarize in tabular form where appropriate).

### 9.1 General Information.

- a. Facility being monitored.
- b. Person(s) responsible for operational and conditioning test periods and affiliation.
- c. Instrument manufacturer.
- d. Instrument model number.
- e. Instrument serial number.
- f. Month/year manufactured.

- g. Schematic of monitoring system measurement path location.
- h. Monitor pathlength, meters.
- i. Emission outlet pathlength, meters.
- j. System span value, percent opacity.
- k. Upscale calibration value, percent opacity.
- l. Calibrated Attenuator values (low, mid, and high range), percent opacity.

#### 9.2 Design Specification Test Results.

- a. Peak spectral response, nm.
- b. Mean spectral response, nm.
- c. Response above 700 nm, percent of peak.
- d. Response below 400 nm, percent of peak.
- e. Total angle of view, degrees.
- f. Total angle of projection, degrees.
- g. Results of optical alignment sight test.
- h. Serial number, month/year of manufacturer for unit actually tested to show design conformance.

#### 9.3 Performance Specification Test Results.

- a. Calibration error, high-range, percent opacity.
- b. Calibration error, mid-range, percent opacity.
- c. Calibration error, low-range, percent opacity.
- d. Response time, seconds.
- e. 24-hour zero drift, percent opacity.
- f. 24-hour calibration drift, percent opacity.
- g. Lens cleanings, clock time.
- h. Optical alignment adjustments, clock time.

9.4 Statements. Provide a statement that the conditioning and operational test periods were completed according to the requirements of Sections 7.3 and 7.4. In this statement, include the time periods during which the conditioning and operational test periods were conducted.

9.5 Appendix. Provide the data tabulations and calculations for the above tabulated results.

### 10. Retest

If the CEMS operates within the specified performance parameters of Table 1-1, the PS tests will be successfully concluded. If the CEMS fails one of the preliminary tests, make the necessary corrections and repeat the performance testing for the failed specification prior to conducting the operational test period. If the CEMS fails to meet the specifications for the operational test period, make the necessary corrections and repeat the operational test period; depending on the correction made, it may be necessary to repeat the design and preliminary performance tests.

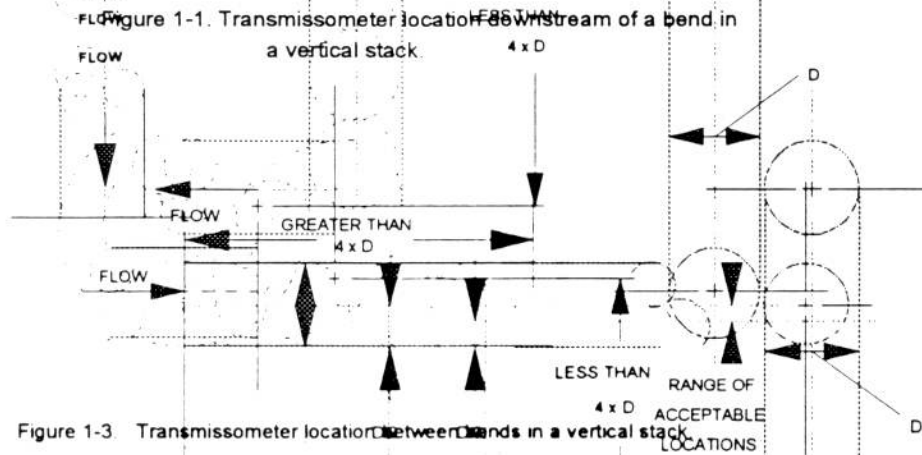
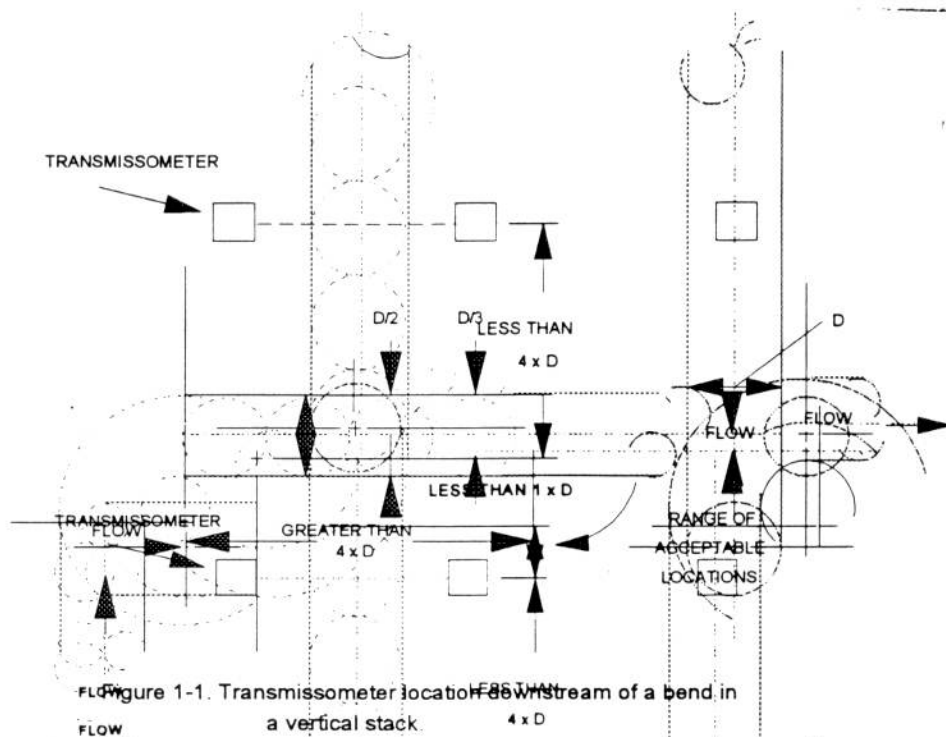


Figure 1-4. Transmissometer location greater than four diameters downstream of a vertical bend in a horizontal stack or duct

TRANSMISSOMETER

Figure 1-2. Transmissometer location upstream of a bend in a vertical stack

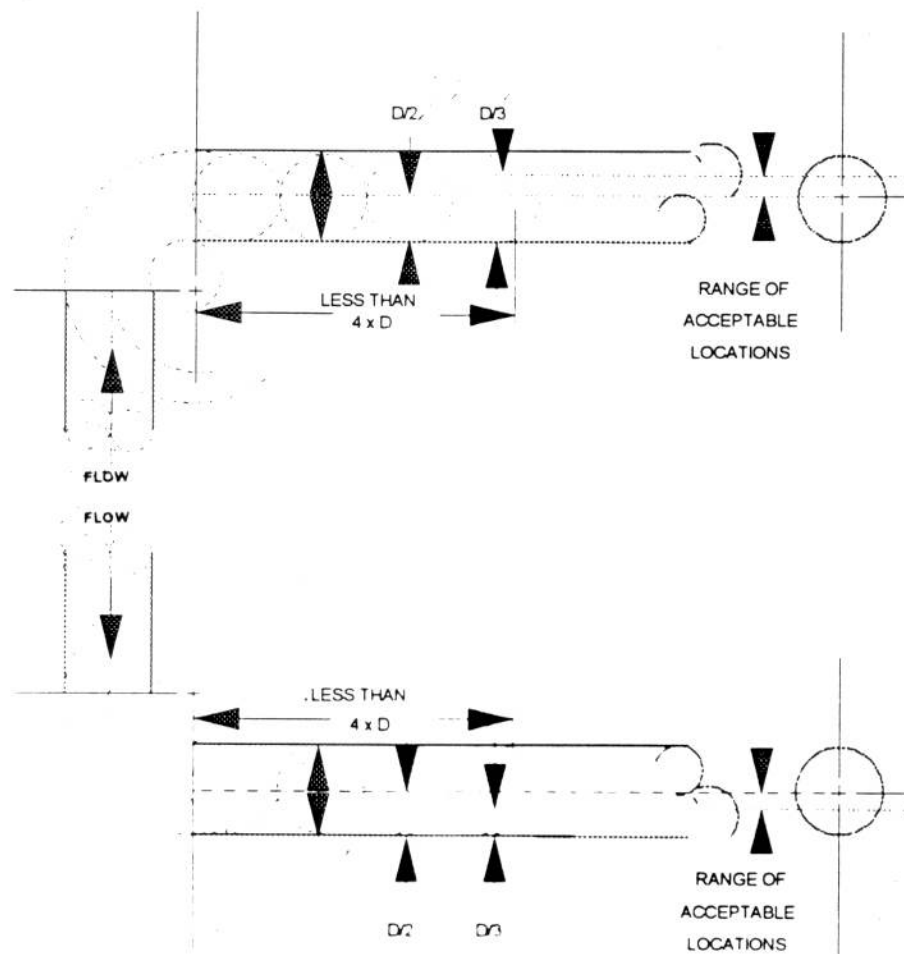


Figure 1-5 Transmissometer location less than four diameters downstream of a vertical bend in a horizontal stack or duct

Person Conduction Test _____		Analyzer Manufacturer _____	
Affiliation _____		Model/Serial No. _____	
Date _____		Location _____	
Monitor Pathlength, $L_1$ _____		Emission Outlet Pathlength $L_2$ _____	
Monitoring System Output Path Length Corrected? Yes _____ No _____			

Calibrated Neutral Density Filter Value		Path Adjusted Optical Density (Opacity)	
Actual Optical Density (Opacity)			
Low-Range _____ (_____)		Low-Range _____ (_____)	
Mid-Range _____ (_____)		Mid-Range _____ (_____)	
High-Range _____ (_____)		High-Range _____ (_____)	

Run Number	Calibration Filter Value (Path-Adjusted Percent Opacity)	Instrument Reading (Opacity), percent	Arithmetic Difference (Opacity), percent		
			Low	Mid	High
1-Low				-	-
2-Mid			-		-
3-High			-	-	
4-Low				-	-
5-Mid			-		-
6-High			-	-	
7-Low				-	-
8-Mid			-		-
9-High			-	-	
10-Low				-	-
11-Mid			-		-
12-High			-	-	
13-Low				-	-
14-Mid			-		-
15-High			-	-	
Arithmetic Mean (Equation 1-3) $\bar{x}$					
Confidence Coefficient (Equation 1-5) CC					
Calibration Error $\bar{x} \pm CC$					

Figure 1-6 Calibration error Determination

Person Conduction Test _____ Affiliation _____ Date _____	Analyzer Manufacturer _____ Model/Serial No. _____ Location _____																																				
<div style="display: flex; justify-content: space-between;"> <div>           High Range Calibration Filter Value:            (Opacity) _____ ( )         </div> <div>           Actual Optical Density (Opacity) _____ ( )            Path Adjusted Optical Density         </div> </div> <div style="margin-top: 10px;">           Upscale Response Value (0.95 x filter value) _____ percent opacity            Downscale Response Value (0.95 x filter value) _____ percent opacity         </div>																																					
<table style="margin: auto; border: none;"> <tr> <td style="width: 40%;">Upscale</td> <td style="width: 10%; text-align: center;">1</td> <td style="width: 40%; text-align: right;">_____ seconds</td> </tr> <tr> <td></td> <td style="text-align: center;">2</td> <td style="text-align: right;">_____ seconds</td> </tr> <tr> <td></td> <td style="text-align: center;">3</td> <td style="text-align: right;">_____ seconds</td> </tr> <tr> <td></td> <td style="text-align: center;">4</td> <td style="text-align: right;">_____ seconds</td> </tr> <tr> <td></td> <td style="text-align: center;">5</td> <td style="text-align: right;">_____ seconds</td> </tr> <tr> <td>Downscale</td> <td style="text-align: center;">1</td> <td style="text-align: right;">_____ seconds</td> </tr> <tr> <td></td> <td style="text-align: center;">2</td> <td style="text-align: right;">_____ seconds</td> </tr> <tr> <td></td> <td style="text-align: center;">3</td> <td style="text-align: right;">_____ seconds</td> </tr> <tr> <td></td> <td style="text-align: center;">4</td> <td style="text-align: right;">_____ seconds</td> </tr> <tr> <td></td> <td style="text-align: center;">5</td> <td style="text-align: right;">_____ seconds</td> </tr> <tr> <td>Average</td> <td></td> <td style="text-align: right;">_____ seconds</td> </tr> <tr> <td>response</td> <td></td> <td></td> </tr> </table>		Upscale	1	_____ seconds		2	_____ seconds		3	_____ seconds		4	_____ seconds		5	_____ seconds	Downscale	1	_____ seconds		2	_____ seconds		3	_____ seconds		4	_____ seconds		5	_____ seconds	Average		_____ seconds	response		
Upscale	1	_____ seconds																																			
	2	_____ seconds																																			
	3	_____ seconds																																			
	4	_____ seconds																																			
	5	_____ seconds																																			
Downscale	1	_____ seconds																																			
	2	_____ seconds																																			
	3	_____ seconds																																			
	4	_____ seconds																																			
	5	_____ seconds																																			
Average		_____ seconds																																			
response																																					

Figure 1-7 Response time determination





Arithmetic Mean	(Eq. 1-3)		Arithmetic Mean	(Eq. 1-3)	
Confidence Coefficient	(Eq. 1-5)		Confidence Coefficient	(Eq. 1-5)	
Zero Drift	(Eq. 1-6)		Zero Drift	(Eq. 1-6)	
<p>* without automatic zero compensation</p> <p>** if zero was adjusted (manually or automatically) prior to upscale check, then use C=0</p>					

Figure 1-8 Zero calibration drift determination



## APPENDIX E

<b>Quarterly Report - Opacity Excess Emission and Monitoring System Performance</b>			
Pollutant: Opacity			
Reporting period dates: From _____ to _____			
Company: PREPA			
Generating Unit Name:			
Emission Limitation: PREQB Regulation 403 (20% opacity for any six minute average, except for a period of not more than 4 minutes in any 30 minute interval not greater than 60%)			
Monitor Manufacturer and Model No.:			
Date of Latest Quarterly Performance and Annual Zero Alignment Check:			
Total source operating time in reporting period (hours):			
<b>Emission data summary<sup>1</sup></b>		<b>CMS performance summary<sup>1</sup></b>	
1. Duration of excess emissions in reporting period due to:		1. CMS downtime in reporting period due to:	
a. Startup/shutdown <sup>2</sup>		a. Monitor equipment malfunctions	
b. Control equipment problems		b. Non-Monitor equipment malfunctions	
c. Process problems		c. Quality assurance/calibration	
d. Other known causes		d. Other known causes	
e. Unknown causes		e. Unknown causes	
2. Total duration of excess emission		2. Total CMS Downtime	
3. [Total duration of excess emissions] X (100) / [Total source operating time]	%	3. [Total CMS Downtime] X (100) / [Total source operating time]	%
<sup>1</sup> All times in hours or fractions thereof <sup>2</sup> No backup data required to be submitted for excess emissions during startup.			

<b>Quarterly Report - Opacity Excess Emission and Monitoring System Performance (Continued)</b>
---

The reports of excess emissions shall include the following information:
--

(1) The magnitude of excess emissions for the average of 36 data points (6-minute Average), any conversion factor(s) used, and the date and time of commencement and completion of each time period of excess emissions.
--

(2) All 10 second readings or strip charts for 30 minutes before and after each time that the 6 minute average exceeds 20% opacity.
---

(3) Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions of the affected facility. The nature and cause of any malfunction (if known), the corrective action taken to eliminate or preventative measures adopted to prevent future excess emissions. The discussion must include the oxygen concentration and if the event occurred during sootblowing.
--

(4) The date and time identifying each period during which the opacity monitoring system was inoperative except for zero and span checks and the nature of the system repairs or adjustments. This includes out of control periods.
---

(5) Describe any changes since last quarter in opacity monitoring system, process, or controls.
---

**Quarterly Report - Oxygen Range Deviations and Monitoring System Performance**

Reporting period dates: From \_\_\_\_\_ to \_\_\_\_\_

Company: PREPA

Generating Unit Name:

Range Established for Boiler During Optimization:

50% Load

75% Load

100% Load

Soot Blowing

Frequency Control

Oxygen Monitor Manufacturer and Model No.:

Date of Latest Cylinder Gas and Relative Accuracy Test Audits:

Total source operating time in reporting period (hours):

<b>Data summary<sup>1</sup></b>		<b>Monitor performance summary<sup>1</sup></b>	
1. Time outside of range in reporting period due to:		1 Oxygen Monitor downtime in reporting period due to:	
a. Control equipment problems		a Monitor equipment malfunctions	
b. Process problems		b Non-Monitor equipment malfunctions	
c. Other known causes		c Quality assurance/calibration	
d. Unknown causes		d Other known causes	
		e Unknown causes	
2. Total duration outside range		2 Total Oxygen Monitor Downtime	
3. [Total duration outside range] X (100) / [Total source operating time]	%	3 [Total Monitor Downtime] X (100) / [Total source operating time]	%

<sup>1</sup> All times will be reported in hours or fraction thereof. The averaging time for oxygen readings shall be 6 12 minutes.

On a separate page, describe any changes since last quarter in oxygen monitoring system, process, or controls.

<b>Quarterly Report - Oxygen Range Deviations and Monitoring System Performance (Continued)</b>
---

At the request of EPA, the following must be provided:
--

(1) The magnitude of those periods outside the optimum established range (6 12-minute average), any conversion factor(s) used, and the date and time of commencement and completion of each time period outside the optimum range.
--

(2) The mode of operation at the time of the operation outside the optimum range,
---

(3) Specific identification of each period outside the optimum range that occurs due to a malfunction of the affected facility. The nature and cause of any malfunction (if known), the corrective action taken to eliminate or preventative measures adopted to prevent future operation outside of the optimum range.
---

(4) The date and time identifying each period during which the oxygen monitoring system was inoperative or out of control except for zero and span checks and the nature of the system repairs or adjustments.
--

(5) Discussion of opacity at the time of the operation outside the optimum oxygen range,
--

Quarterly Report -Viscosity Range Deviations and Monitoring System Performance			
Reporting period dates: From _____ to _____			
Company: PREPA			
Generating Unit Name:			
Range Established for Boiler During Optimization:			
Viscosity Monitor Manufacturer and Model No.:			
Date of Latest Quality Assurance Assessment:			
Total source operating time in reporting period (hours):			
<b>Data summary<sup>1</sup></b>		<b>Monitor performance summary<sup>1</sup></b>	
1. Time outside of range in reporting period due to:		1. Viscosity Monitor downtime in reporting period due to:	
a. Control equipment problems		a. Monitor equipment malfunctions	
b. Control equipment problems		b. Non-Monitor equipment malfunctions	
c. Other known causes		c. Quality assurance/calibration	
d. Unknown causes		d. Other known causes	
		e. Unknown causes	
2. Total duration outside range		2. Total Viscosity Monitor Downtime	
3. [Total duration outside range] X (100) / [Total source operating time]	%	3. [Total Monitor Downtime] X (100) / [Total source operating time]	%
<sup>1</sup> All times will be reported in hours. The averaging time for viscosity readings shall be 1 hour.			
On a separate page, describe any changes since last quarter in viscosity monitoring system, process, or controls.			

<b>Quarterly Report - Viscosity Range Deviations and Monitoring System Performance (Continued)</b>
--

At the request of EPA, the following must be provided:
--

(1) The magnitude of those periods outside the optimum established range (1-hour Average), any conversion factor(s) used, and the date and time of commencement and completion of each time period outside the optimum range.
---

(2) The mode of operation at the time of the operation outside the optimum range,
---

(3) Specific identification of each period outside the optimum range that occurs due to a malfunction of the affected facility. The nature and cause of any malfunction (if known), the corrective action taken to eliminate or preventative measures adopted to prevent future operation outside of the optimum range.
---

(4) The date and time identifying each period during which the viscosity monitoring system was inoperative except for zero and span checks and the nature of the system repairs or adjustments.
---

(5) Discussion of opacity at the time of the operation outside the optimum viscosity range,
---



**Quarterly Report - Other Monitored Parameter Range Deviations and Monitoring System Performance<sup>1</sup>**

Reporting period dates: From \_\_\_\_\_ to \_\_\_\_\_

Company: PREPA

Generating Unit Name:

Source operating time in reporting period (Hours):

Parameter	Optimum Range	Percent of operating time outside the optimum range	Percent Monitor Down Time
Average Cold End Air Heater Temperature			
Major cause of deviation from the optimum range and monitor down time:			
Differential Pressure Across Air Heaters			
Major cause of deviation from the optimum range and monitor down time:			
Atomizing Steam/Fuel Oil Differential Pressure (at burner header)			
Major cause of deviation from the optimum range and monitor down time:			
Sootblower Steam Pressure at header			

Major cause of deviation from the optimum range and monitor down time:

Fuel Flow Rate

Major cause of deviation from the optimum range and monitor down time:

Gross Power in Kilowatts

Major cause of deviation from the optimum range and monitor down time:

Furnace Pressure

Major cause of deviation from the optimum range and monitor down time:

Feedwater Temperature at Economizer Inlet

Major cause of deviation from the optimum range and monitor down time:

<sup>1</sup>Do not include startup.

At the request of EPA, the following must be provided:

- (1) The magnitude of those periods outside the optimum established range (1-hour Average), any conversion factor(s) used, and the date and time of commencement and completion of each time period outside the optimum range.
- (2) The mode of operation at the time of the operation outside the optimum range,
- (3) Specific identification of each period outside the optimum range that occurs due to a malfunction of the affected facility. The nature and cause of any malfunction (if known), the corrective action taken to eliminate or preventative measures adopted to prevent future operation outside of the optimum range.
- (4) The date and time identifying each period during which the monitoring system was inoperative except for zero and span checks and the nature of the system repairs or adjustments.
- (5) Discussion of opacity at the time of the operation outside the optimum range,
- (6) Describe any changes since last quarter in monitoring systems.



SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN

PART I  
GENERAL INFORMATION

1. Name of Facility:

2. Type of Facility:

3. Location of Facility:

4. Name and address of owner or operator:

Name:

Address:

Telephone:( ) - Home:( ) -

5. Designated person accountable for oil spill prevention at facility:

Name:

Title:

Telephone:( ) - Home:( ) -

---

MANAGEMENT APPROVAL

This SPCC Plan will be implemented as herein described.

Signature:

Name:

Title:

---

CERTIFICATION

I hereby certify that I have examined the facility, and being familiar with the provisions of 40 CFR, Part 112, attest that this SPCC Plan has been prepared in accordance with good engineering practices.

\_\_\_\_\_  
Printed Name of Registered Professional Engineer

(Seal)

\_\_\_\_\_  
Signature of Registered Professional Engineer  
Registration No. \_\_\_\_\_ State \_\_\_\_\_

Date: \_\_\_\_\_

## INTRODUCTION

The SPCC Plan should be a carefully thought-out written description of the facility's compliance with the requirements of all applicable elements of 40 CFR 112.3-112.7. The Plan shall be prepared in accordance with good engineering practices.

The plan should have the full approval of management at a level to commit the necessary resources to fully implement the plan.

Include a discussion of the facility's conformance with the requirements listed.

The plan may deviate where applicable to a specific facility provided equivalent protection is provided by some other means of spill prevention, control, or countermeasures.

Where the Plan does not conform, the Plan shall state the reason for non-conformance and describe in detail, alternate methods and how equivalent protection will be achieved.

The following SPCC Plan outline parallels 40 CFR 112.3-112.7. (See **Appendix for SPCC regulations and checklist**).

**Please refer to the appropriate regulation when completing.**

**Reference to the corresponding regulation is in [ ] after each question.**

Response to statements should be: YES, NO or NA (Not Applicable). Some statements require a discussion and/or a description not just a YES, NO or NA.

Include supporting documents as necessary.

Maintain a complete copy of the Plan at the facility readily accessible for inspection.

PREPARATION AND IMPLEMENTATION  
[40 CFR 112.3 (b)-(f)]

Was the plan prepared within 6 months after facility became operational?

Was the plan implemented within one year after the facility became operational?

Was the SPCC plan certified by a Professional Engineer (P.E.)?

The plan must be available during normal 8 hour day.

(this item in reality means that whenever the facility is operating the plan must be available for the facility's personnel and for government inspection)

Was a extension of time required to prepare and implement the plan? Please, explain.

SPCC AMENDMENTS BY THE EPA REGIONAL ADMINISTRATOR (R.A.)  
[40 CFR 112.4 (a)-(f)]

If the facility discharges more than **one thousand (1,000) gals.** of oil into Navigable Waters or has **two (2) reportable spills** (oil that forms a sheen or can create substantial harm in Navigable Waters) **within twelve (12) months**, the facility **must prepare and send** a report to the R.A. stating the following:

1. Name of the facility;
2. Name(s) of the owner or operator;
3. Location of the facility;
4. Date and year of the initial facility operation;
5. Maximum storage or handling capacity;
6. Description of the facility including maps and diagrams;
7. A complete copy of the SPCC plan including amendments;
8. The causes of the spill, including failure analysis;
9. The corrective actions and/or countermeasures taken;
10. Additional preventive measures taken or contemplated; and
11. Other information as required by the R.A..

All the information must also be sent to the applicable state agency.

(See Appendix for definition of Navigable Waters)

**THREE (3) YEAR REVIEW REQUIREMENTS**  
**[40 CFR 112.5 (a)-(c)]**

Every three (3) years the plan must be revised and updated if changes in the plan or in the facility structure have taken place.

The amendments must be certified by a Professional Engineer (P.E.) and must be submitted to the EPA every time a three (3) year review takes place as a minimum.

**Provide a record of amendments in this section.**

**See Appendix for (Figure 1)**



SPILL HISTORY  
[40 CFR 112.7 (a)]

Description of spill events, including corrective actions. The events should be in chronological order starting with the most recent spill. This information can be given in a table form if the facility so desires. Proof of spill records must be presented.

**See Appendix for spill record sample (Figure 2)**

## FACILITY OIL STORAGE

[40 CFR 112.7 (b)]

Page 1 of 2

Description of facility's physical plant.

Describe worst spill case scenario (based on the largest storage containment).

Designer must ask himself - What if secondary containment fail? Where will the material flow to? How fast is the material going to flow? Does the facility have tertiary means of containment or is it up to personnel interaction with containment material (booms, absorbent pads, etc.)

Describe other potential spill sites.

**Table must be included in this section (Figure 3) Not in the Appendix.**

**Facility diagram (Figure 4, Site Plan) Not in the Appendix.** Include location and contents of each storage tank. For each tank or storage containers. Including underground storage and treatment systems for oil recovery (passive and/or active) as well.

## SECONDARY CONTAINMENT

[40 CFR 112.7 (c)(1)(i)-(vii)]

Spill Prevention Measures including procedures for routine handling of products (loading, unloading, and facility transfers, etc.):

Spill Controls such as secondary containment around tanks and other structures, equipment, and procedures for the control of a discharge.

Describe appropriate containment and/or drainage control structures or equipment to prevent discharged oil from reaching a navigable water source.

REGULATION 40 CFR 112.7(c)

IS NOT PRACTICABLE

[40 CFR 112.7(d)]

Page 1 OF 2

When it is determined that the installation of structures or equipment listed in 40 CFR 112.7(c) is not practicable:

- (a) clearly demonstrate such impracticability;
- (b) conduct integrity testing of tanks;
- (c) conduct integrity and leak testing of the valves and piping yearly as a minimum;
- (d) provide an Oil Spill Contingency Plan that must include, at a minimum a description of response plans, personnel needs, and methods of mechanical containment; steps to be taken for removal of spilled oil; access and availability of sorbents, booms, and other equipment; and such other information as required by the Regional Administrator. Where more than one water use may be adversely affected an response operations may not be adequate to protect all uses, specify the order of priority in which various water uses are to be protected.

(See also: 40 CFR 109, see Appendix)

REGULATION 40 CFR 112.7(c)  
IS NOT PRACTICABLE  
CONTINGENCY PLAN  
PAGE 2 OF 2

Provide a written commitment of manpower, equipment, and materials required to control expeditiously and remove any quantity of oil that may be discharged (consider factors such as financial capability):

The contingency plan must include all the items that require secondary containment, but do not have, do to impracticability.

Describe Contingency Plan: **Subjected to EPA's approval.**

(See also: 40 CFR 109, see Appendix)

FACILITY DRAINAGE  
[40 CFR 112.7 (e)(1)(i)-(v)]

Drainage from diked storage areas is controlled as follows [include operating description of valves, pumps, ejectors, etc. (Note: Flapper-type valves should not be used)]

**Diked storage areas may be emptied by manual and/or mechanical means but the accumulation must be examined before starting to ensure oil free water discharges.**

Valves should be manual, open and close design and locked or capped at all times unless been drained.

Drainage from undiked areas is controlled as follows (include description of ponds, lagoons, or catchment basins and methods of retaining and returning oil to the facility):

Discussion of alternate facility drainage:

Facility's in locations subject to flooding.

Discuss additional requirements for events that occur during periods of flooding:

**See Appendix (Figure 5)**

BULK STORAGE TANKS  
[40 CFR 112.7 (e)(2)(i)-(xi)]

Describe aboveground tank design, materials of construction, fail-safe engineering, and if needed, corrosion protection:

Describe secondary containment design, construction materials (adequately impervious and compatible with material in the tank), and volume:

Describe aboveground tank inspection methods, procedures, and record keeping:  
**See also Appendix (Figure 6)**

\*Use Bulk Tank Inspection Procedure sheet.

High liquid level warning alarm or other fast response system for determining the liquid level of each bulk tank:

The procedure for supervising the drainage of rain water from secondary containment into a storm drain or an open watercourse is as follows [include description of (a) inspection for pollutants, and (b) method of valving security]. **A record of inspection and drainage events is to be**

**maintained:**

**See also Appendix (Figure 5)**

Underground Metallic Storage Tanks.

Discuss protective measures against corrosion and regular leak testing.

Partially Buried Metallic Tanks.

Discuss protective measures against corrosion.

Aboveground Tanks.

Every Ten Years or after material repairs:

- (a) Discuss integrity testing to include tank supports and foundations. Include comparison records.

Frequent external tank observations by personnel. Discuss:

Internal heating coil leakage control:

- (a) Monitoring the steam return or exhaust lines for oil.  
Describe monitoring procedure
- (b) Passing the steam return or exhaust lines through a settling tank, skimmer, or other separation system. Discuss
- (c) Installing external heating systems. Discuss:

New and Old Tank Installations.

Discuss fail-safe engineered installation to avoid spills:



Disposal facilities for plant effluents discharged into navigable waters are observed frequently for indication of possible upsets which may cause an oil spill event.  
Describe method and frequency of observations:

Visible oil leaks should be promptly corrected.

Accumulated oil or oil contaminated materials resulting from such a discharge is completely removed within 72 hours from the time the spill event occurs.

FACILITY TRANSFER OPERATIONS,  
PUMPING AND IN-PLANT PROCESS  
[40 CFR 112.7 (e)(3)(i)-(v)]

All piping shall be placed aboveground where possible.

Buried piping:

Buried pipe installations comply with :

- (a) Discuss protective wrapping and coating
- (b) Pressure testing of piping when warranted in certain areas (examples are high levels of underground vibrations, proximity to or very high water table, etc.)

Piping not in service or in standby service for an extended time: terminal connection at the transfer point is capped or blank-flanged.

Pipe supports designed to minimize abrasion and corrosion and allow for expansion and contraction.

All Aboveground Valves, Piping, and Appurtenances:

- (a) Regular examinations;
- (b) Records to be maintained;
- (c) Conform to relevant industry codes, i.e., ASME standards.

Vehicular traffic granted entry into the facility:

- (a) Oral warning or appropriate signs to be sure that the vehicle, because of its size, will not endanger aboveground piping.
- (b) Post weight restrictions to prevent damage to underground piping.

See Appendix (Figure 6)

FACILITY TANK CAR AND TRUCK  
LOADING/UNLOADING  
[40 CFR 112.7 (e)(4)(i)-(iv)]

Tank car and tank truck loading/unloading occurs at the facility. (IF YES, complete (a) through (e) below.)

- (a) Loading/unloading procedures meet the minimum requirements and regulations of the Department of Transportation (**refer to 49 CFR Parts 177.834, See Appendix**)
- (b) The unloading area has a quick drainage system.
- (c) The containment system will hold the maximum capacity of any single compartment of a tank truck loaded/unloaded in the plant. Describe containment system design, construction materials, and volume:
- (d) An interlocked warning light, a physical barrier system, or warning signs are provided in loading/unloading areas to prevent vehicular departure before disconnect of transfer lines. Describe methods, procedures, and /or equipment used to prevent

premature vehicular departure:

- (e) Drains and outlets on tank trucks and tank cars are checked for leakage before loading/unloading or departure.

ONSHORE OIL PRODUCTION FACILITIES  
[40 CFR 112.7 (e)(5)(i)-(iv)]

At tank batteries and central treating stations where there is a possibility of an accidental discharge into navigable waters, dikes or equivalent measures shall have drains closed and sealed at all times except for rainwater being drained.

Describe the inspection removal of accumulated oil on rain water at diked areas:

Field drainage ditches and equivalent measures shall be inspected at regularly scheduled intervals for accumulation of oil or oil contaminated soil.

Describe secondary containment of all tank battery and central treating plant installations if not included in [40 CFR 112.7 (e)(2)].

Any accumulation of oil discharge shall be removed within 72 hours.

All tanks containing oil shall be visually inspected at least once a year.

Describe new and old tank battery installation fail-safe engineering to include:

- (a) Adequate tank capacity;
- (b) Overflow equalizing lines between tanks;
- (c) Adequate vacuum protection;
- (d) High level sensors.

Facility transfer operations, onshore oil production facility:

Describe monthly examination of all aboveground valves and piping for facility transfer operation.

Describe inspection procedure for salt water disposal facilities.

Describe flowline maintenance program.

ONSHORE DRILLING  
AND WORKOVER FACILITIES  
[40 CFR 112.7 (e)(6)(i)-(iii)]

Describe diversion structures that may be necessary to intercept and contain spills of fuel, crude oil, or oily drilling fluids:

Before drilling below any casing or during workover operations a blowout prevention (BOP) assembly and well control system shall be installed.

Casing and BOP installations shall be in accordance with State regulatory agency requirements.

OFFSHORE OIL DRILLING, PRODUCTION  
OR WORKOVER FACILITIES  
[40 CFR 112.7(e)(7)]

Describe oil drainage collection equipment used to prevent and control small oil spillage around pumps, glands, valves, and allied equipment.

Describe how facility drains shall be controlled and directed toward a central collection sump or equivalent collection system sufficient to prevent the discharge of oil.

Where drains and sumps are not practicable, oil contained in collection equipment shall be removed to prevent overflow, not less than once a year.

Facilities employing a sump system:

- (a) Sump and drains shall be adequately sized and a spare pump shall be available to remove liquid from the sump and assure that there is no accidental oil discharge.
- (b) A monthly maintenance inspection of the liquid removal system and pump start device shall be employed.
- (c) Redundant automatic sump pumps and control devices may be required for some installations.

For facilities with dump valves on separators and treaters, describe equipment used to prevent oil discharges:

Describe equipment used to prevent oil discharges from any atmospheric storage or surge containers:

Describe equipment used to prevent oil discharges from any pressure tanks:

Describe tank corrosion protection:

Describe the procedure for inspecting and testing pollution prevention equipment and systems:

The procedure for inspection and testing of pollution prevention equipment and systems shall be kept at the facility.

Testing and inspection of pollution prevention equipment and systems shall be conducted by the owner or operator of the facility on a scheduled periodic basis, not less than monthly.

Describe the method of testing human and equipment pollution control and countermeasures systems:

Describe the surface and subsurface well shut-in valves and devices used at the facility:

Detailed records of shut-in valves and devices for each well shall be kept by the owner or operator for a period of at least five years.

Before drilling below any casing or during workover operations a blowout prevention (BOP) assembly and well control system shall be installed.

Casing and BOP installations shall be in accordance with State regulatory agency requirements:

Describe the extraordinary well control measures used in emergency conditions:

All manifolds are equipped with check valves on individual flowlines:

Describe the pressure relief system used if the shut-in well pressure is greater than the working pressure of the flowline and manifold valves up to and including the header valves associated with that individual flowline:

Describe corrosion protection used on all piping appurtenant to the facility:

Sub-marine piping appurtenant to the facility:

- (a) Be adequately protected against environmental stress and other activities, i.e., fishing operations.
- (b) Be in good operating conditions at all times, being inspected on a scheduled periodic basis for failures.

All inspections shall be documented and maintained at the facility for a span of five years.

It is recommended that the owner or operator of offshore facilities have written instructions for contractors and subcontractors whenever contracted activities include servicing a well or systems appurtenant to a well or pressure vessel. A copy of the instructions shall be maintained at the offshore production facility.



INSPECTION PROCEDURE  
INSPECTION, TEST, AND RECORDS  
[40 CFR 112.7(e)(8)]

Records of inspection must be maintained with SPCC Plan.

Use one sheet per procedure.

Written procedures developed by the facility owner or operator or the certifying engineer.

required by this part:

PROCEDURE:

INSPECTION OR TEST:

RECORD OF INSPECTION

See Appendix for (Inspection form example.)

SECURITY  
(excluding oil production facilities)  
[40 CFR 112.7(e)(9)(i)-(v)]

**Plants handling, processing, or storing oil are fenced.**

**Entrance gates are locked and/or guarded when the plant is unattended or not in production.**

Any valves which permit direct outward flow of a tank's contents are locked closed when in non-operation or standby status.

Starter controls on all oil pumps in non-operating or standby status are:

- (a) locked in the OFF position;
- (b) located at site accessible only to authorized personnel.

Discussion as appropriate:

Facility Lighting is commensurate with the type and location of the facility:

PERSONNEL, TRAINING, AND SPILL  
PREVENTION PROCEDURES  
[40 CFR 112.7 (e)(10)(i)-(iii)]

Personnel are to be instructed in the operation and maintenance of equipment to prevent oil discharges, and applicable Federal, State, and Local pollution control laws, rules, and regulations.

Training exercises should be conducted periodically for all personnel.

Training should be given to new employees.

INSTRUCTION PROCEDURE:

Scheduled prevention briefings for the operating personnel are conducted at least once a year to assure adequate understanding of the SPCC Plan.

BRIEFING PROCEDURE:

Training records shall be kept in the facility available for inspection.

APPENDIX

40 CFR 112.7 REGULATIONS

40 CFR 112.7 REGULATIONS CHECKLIST

NAVIGABLE WATERS DEFINITION

40 CFR 109 REGULATIONS

49 CFR 177.834 REGULATIONS

DRAFT SHEET OIL VS. NON-OIL PRODUCTS

COMBINING SPCC AND STATE DPCC/DCR/PE PLANS AGREEMENT

Emergency Contact List

FIGURES 1,2,5,6

EMERGENCY CONTACT LIST  
[40 CFR 112.7(d)]

Facility Response Coordinator:

Alternate:

CONTACT THE APPROPRIATE AGENCIES AS REQUIRED:

Police Department:

Fire Department:

Health Department:

Local Emergency Planning Committee:

Cleanup Contractors:

State Emergency Response Commission:

National Response Center:

Notification of critical water use areas:

Downstream Water Suppliers:

SPILL REPORT  
[40 CFR 112.7(a)]

Location of Spill:

Facility address:

Facility phone:

Date of Spill:

Time of Spill:

Type of Material Spilled:

Estimate of Total Quantity Spilled:

Estimate of Quantity Spilled into Navigable Waters:

Source of Spill:

Damages or Injuries Caused by Spill:

Action being taken:

Is Evacuation Needed?

Names of Individuals and/or Organizations contacted:

Notes:

Figure 2

**EMERGENCY PROCEDURES**  
[40 CFR 112.7 (c)-(d)]

Describe procedures to be used in an emergency situation. Organize in a manner to make them readily useable in an emergency. Indicate appropriate supporting materials:

[40 CFR 112.7 (e)(2) AND 40 CFR 112.7 (e)(3)(i)-(v)]

- Tank Number or secondary containment or pipeline, etc.:

[illegible]



\* Inspector certify's that the inspection has been performed in a manner consistent with federal, state and local regulations.

Address of Inspector:

Figure 6

THREE (3) YEAR REVIEW RECORD OF AMENDMENTS

DATE OF AMENDMENTS	AMENDED SECTIONS OR TOPICS	REVIEWED BY SIGNATURE*

▪ The amendments must be certified by a Professional Engineer (P.E.) an exception to this requirement is the amending of phone numbers and contacts.

Figure 1

ONSHORE FACILITY BULK STORAGE TANKS  
DRAINAGE SYSTEM  
[40 CFR 112.7 (e)(1)]

Tank Number:

Inspection Procedure:

Record of drainage, bypassing, inspection, and oil removal from secondary containment:

Date of drainage	Date of Bypassing		Date of Inspection	Oil Removal
	<u>Open</u>	<u>Closed</u>		

Figure 5

[illegible]

**\*Attach Top View (facility layout) map**

Figure 3